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Agricultural education of traditional farmers in Zambia with special reference to the Mpika district.

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AGRICULTURAL EDUCATION OF TRADITIONAL FARMERS IN ZAMBIA WITH SPECIAL REFERENCE TO THE MPIKA DISTRICT

A Dissertation Presented

By

Mary Kristine Garvey

Submitted to the Graduate School of the
University of Massachusetts in partial fulfillment
of the requirements for the degree of

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Sixty-two farmers in Zambia's Mpika District made this dissertation possible. The farmers, including women and men, participated in questionnaire-based discussions lasting from one to three hours. The impact of the frank and thoughtful discussions with these individuals will influence me the rest of my life. Three research assistants facilitated the field research with their language skills, enthusiasm, knowledge and insights.

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research site and evaluation of results, the entire staff provided support, encouragement and advice.

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To my advisory committee and the dissertation committee, a special word of appreciation for the solid academic support and encouragement along the way.

To Zambia's farmers, a tribute to your self-sufficiency and forthrightness, *a lutta continue, victoria e certa*.

ABSTRACT

AGRICULTURAL EDUCATION OF TRADITIONAL FARMERS IN ZAMBIA WITH SPECIAL REFERENCE TO THE MPIKA DISTRICT

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Are traditional farmers in the Mpika District of Zambia recipients, victims or participants in the non-formal agricultural education available to them?

In Zambia agriculture fails year after year to supply domestic basic food needs. Agricultural education is often cited as a culprit. What agricultural education do the farmers actually receive? What would they like to receive? Do they have more serious needs? What agricultural education does the extension service think farmers want? The purpose of this study is to identify factors which impede the delivery of agricultural education as well as factors which impede traditional farmers' receptivity to it.

This explanatory study dictated the use of a variety of participatory research techniques. Data was collected through interviews, observation, review of Government

development plans, review of relevant studies and visits to individuals and organizations.

The research effort was divided into three major areas in order to explore the important facets of non-formal agricultural education: methods and content; logistical and organizational factors; and finance and government policy.

The findings identify factors which impede the delivery of agricultural education as well as factors which impede traditional farmers' receptivity to agricultural education.

The findings indicate that traditional farmers would like more agricultural education than they receive. Receipt of education was impeded by lack of clear realistic guidelines for work with farmers; lack of extension staff and transport; severe under-utilization of Farm Institute and Farmer Training centers due to funding difficulties; lack of supporting and background materials such as slides, films, handouts, and lack of common criteria for defining farmers or the educational package they should receive.

Youth extension and female extension presented unforeseen problems. Neither is functioning properly. A tragedy is in the making because the agricultural education of these significant segments of society is being almost

totally neglected.

This study is unique mainly because traditional farmers were consulted along with the extension staff and others involved in non-formal agricultural education. A way should be found to bring them, particularly the farmers, into the problem-solving process on a permanent basis.

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CHAPTER I

INTRODUCTION

The Focus

Agricultural education in Zambia is theoretically available to all types of farmers. Even though by African standards the urban population is large, the majority of Zambians make their livelihood from agriculture. In spite of a variety of nationwide agricultural education efforts since independence in 1964, the majority of farmers continue to use traditional methods to grow subsistence crops. The problems are not limited to whether or not an individual farmer receives education. The problems include or stem from: policy; financial factors; logistical factors; organizational factors and factors related to educational methods and content.

The agricultural education[1] available to and

[1]The Government of the Republic of Zambia has recognized the importance of agricultural education and has endeavoured to improve all aspects of it, including both formal and non-formal education. This investigation focuses on non-formal agricultural education only, hereafter referred to as agricultural education. See page 27 for the definition.

desired by a group of traditional farmers[1] in Zambia is examined in this dissertation. Factors are identified which impede the effectiveness of delivery of agricultural education as well as those factors which impede the farmers' receptivity to agricultural education. The data used in the study are the result of field research, supported and complemented by library research. The data from the field research was gathered by the author and three research assistants from January through April 1980. In addition to ascertaining details about farmers and the views of farmers on agricultural education, identical and related questions were put to Zambian Department of Agriculture staff responsible for agricultural education and extension services. In addition, individuals involved in or responsible for a variety of institutions and educational activities including or related to agricultural education were also interviewed. Hybrid maize, the theme and thrust of Zambia's agricultural education efforts, is a focal point throughout this dissertation.

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[1]The terms subsistence and traditional will be used interchangeably throughout the study. Please see pages 32-37 for the definitions of farmers in this study. Note: traditional farmers not commercial or emergent farmers are a focal point of this dissertation.

Physical Features

Zambia is a landlocked country in Central Africa. It shares borders with Tanzania, Malawi, Mozambique, Zimbabwe, Namibia, Angola and Zaire. It has an area of 750,000 square kilometers (290,000 square miles) and is on a plateau that averages 1,000 to 2,200 meters above sea level. The arable soils are widespread and vary from clay to sandy soils. The average annual rainfall is 500 mm in the south and 1,400 mm in the north. The rainy season, which extends from approximately November to April, is followed by a cool, dry season up to July and a hot, dry season through November.

Basic Details

1. Population Distribution.

   Population: 1980 estimates;[1]

   Total: 5,834,000

   Urban: 2,413,000 (41%) Rural: 3,421,000 (59%)

   Northern Province:[2] 647,000 (11% of total population)

   Mpika District: 70,000 (11% of the total population in the province)

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[1]Republic of Zambia, Central Statistical Office (CSO) The 1974 Sample Census of Population; Second Report Results and Interim Projections of Population 1974-84, (Lusaka: Central Statistical Office, January 1979), pp. 15, 21 and 23.

[2]For the Northern Province, the 1969 urban population was 14,206 and the rural 530,890. In 1974, the urban

2. Gross domestic product by kind of economic activity in producers' values at constant (1970) and current prices (K'million).[1]

TABLE 1

GROSS DOMESTIC PRODUCT VALUES FOR AGRICULTURAL SECTORS AND MINING, 1971 AND 1978

Economic Activity	1971		1978	
	1970 constant prices	current value	1970 constant prices	current value
Agriculture, forestry and fishing				
--commercial sector	44.3	52.7	63.0	137.0
--subsistence sector	95.1	101.3	108.5	245.0
Mining and Quarrying	415.8	275.1	483.5	277.0

3. The per capita national income at current prices for 1978 was K 340 per person and K 146 per person in real value (at 1970 adjusted prices).[2]

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population was 32,000 and the rural population 553,000. The rate of growth for the urban population was 17.4%, the highest in Zambia.

[1]Republic of Zambia, Central Statistical Office, (CSO), Monthly Digest of Statistics, Vol. XV, Nos. 4 to 6, April/June 1979, (Lusaka: The Government Printer, July, 1979), pp. 50-51.

[2]Ibid., p. 1.

4. Years marketed production of maize.[1]

TABLE 2

MARKETED PRODUCTION OF MAIZE IN THOUSANDS OF BAGS FROM 1970 - 1978

Years	Marketed Production of Maize (000's) Bags
1970/71	2,791
1971/72	1,388
1972/73	4,137
1973/74	6,367
1974/75	4,290
1975/76	6,491
1976/77	8,334
1977/78	7,734

[1]Republic of Zambia, Central Statistical Office, (CSO), Monthly Digest of Statistics, Vol. XV, Nos. 4 to 6, April/June 1979, (Lusaka: The Government Printer, July, 1979), p. 8.

5. Selected imports of cereal and cereal preparations.[1]

TABLE 3

IMPORTS OF CEREAL AND CEREAL PREPARATIONS
FROM 1972 - 1977

Years	Selected Imports of Cereal and Cereal Preparations K'000
1972	11,784
1973	6,011
1974	10,931
1975	18,388
1976	10,902
1977	14,351

[1]Republic of Zambia, Central Statistical Office, (CSO), Monthly Digest of Statistics, Vol. XV, Nos. 4 to 6, April/June 1979, (Lusaka: The Government Printer, July 1979), p. 21.

6. Average urban retail prices for fertilizer and maize from 1971 - 1979.

TABLE 4

AVERAGE URBAN RETAIL PRICES FOR FERTILIZER AND MAIZE FROM 1971 - 1979

Years	Average Urban Retail Price Maize[1] (Kwacha)	Fertilizer Compound D for Maize[2] (Kwacha)
1971	--	2.75
1972	4.32	3.50
1973	4.32	4.00
1974	4.32	4.00
1975	4.32	4.00
1976	7.75	6.55
1977	7.70	6.55
1978	9.60	6.55
1979	9.60	11.08

[1]Republic of Zambia, Central Statistical Office, (CSO), Monthly Digest of Statistics, Vol. XV, Nos. 4 to 6, April/June 1979, (Lusaka: The Government Printer, July 1979), p. 58.

[2]Nambord and published producer lists, compiled and made available by the Ministry of Agriculture and Water Development.

7. Fuel import bills 1972-1976.[1]

TABLE 5

FUEL IMPORT BILLS 1972 AND 1976

Year	Volume in Barrels	Value (f.o.b.)
1972	3,614,158	K.11,469,000
1976	7,390,300	K.64,043,000

The land tenure system in Zambia divides land into three categories: State land; leasehold; and traditional or customary land. Leasehold is State land which has been leased for a defined period and represents about 2.5 million hectares.[2] Another 2.5 million hectares of State land is devoted to game parks. Approximately 71 million hectares are traditional or customary land. Generally the tenure customs vary, but usually the chief has authority to allocate land.[3]

Of the total area of State land available for

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[1] Industrial Zambia A Journal of Zambian Business, (Lusaka: Tridak Zambia Ltd., March 1978), p. 54.

[2] A hectare is equivalent to 2.471 acres.

[3] C.S. Lombard and A.H.C. Tweedie, Agriculture in Zambia since Independence (Lusaka: National Educational Company of Zambia Limited, 1972), pp. 76-77.

agriculture, only about 150,000 hectares have been stumped and cleared; of this, roughly 80,000 hectares are cultivated. More than 70 per cent of Zambia's rural population lives on traditional or customary land, and an estimated 8 million hectares of this land have agricultural potential.

The General Problem

The Government of Zambia is committed to a policy of self-reliance with respect to domestic food needs. However, Zambia continues to be plagued by constant failure in its agriculture. Dependence on imported food-stuffs deprives rural Zambians of income from sales of locally produced food. For Zambia, as a landlocked country, reliance on imported food is a political and economic threat. The rural/urban gap in income and social services is growing. This disparity is not only politically dangerous, but makes a mockery of Zambia's declared ideology--Humanism.[1] Malnutrition[2] remains a problem in the country; it could be prevented by nutrition education and rural self-sufficiency in food production. In support of the Government policies,

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[1]Humanism is the ideology of Zambia which is based on the ideal that people are the center of society. See page 40 for a fuller definition.

[2]The controversial Dumont report released in 1980 estimates that 30 per cent of Zambian children suffer from malnutrition and the remaining 70 per cent are underweight. Out of every 20 children born, 8 die before the age of five. Aida Parker, "Spectre of Starvation in a most fertile land," The Citizen, Republic of South Africa, 4 June

Figure 1. Map of Africa showing the location of Zambia. Used with the permission of Africa News, Durham, North Carolina.


GABON
CONGO
ZAIRE
KENYA
UGANDA
TANZANIA
MALAWI
ANGOLA
ZAMBIA
ZAMBIA
NAMIBIA
ZIMBABWE
BOTSWANA
MOZAMBIQUE
MALAGASY REPUBLIC
SWAZILAND
SOUTH AFRICA
LESOTHO

Figure 1.

the Department of Agriculture staff throughout the country continue to encourage the rural population of Zambia to become self-reliant and to achieve self-sufficiency with respect to all major food crops, to establish adequate reserves of major food crops, and to produce surpluses for export. While import bills[1] for some domestic food needs increase almost every year, near self-sufficiency has been achieved with respect to maize seed, for example, imports of which amounted to 1.7 million kilos in 1965,[2] but declined to 24,000 kilos in 1975. Similarly, sugar and sugar preparation imports in 1965 were valued at Kwacha 4.9 million[3] but declined to K.590,000 in 1975.[4]

Virtually all the formally marketed milk, fruit, sugar, pigs and Virginia tobacco are produced by commercial farmers. One-half of marketed maize and, to a lesser

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1980. While the malnutrition problem is very real in Zambia, Professor Dumont and others like him are too often widely quoted all over the world after spending a short time in Zambia. In this same article, Aida Parker reports that Professor Dumont knows Zambia well. "In 1977 he spent three weeks touring the country's rural areas."

[1]The cost of imported fuel rose from almost K3 million per 1 million barrels in 1972 to K9 million per 1 million barrels in 1976. See page 8 above.

[2]One kilo or kilogram is equivalent to 2.2046 pounds.

[3]The Kwacha, Kl is equivalent to US $1.20 as at the January 1980 exchange rate of .83.

[4]Republic of Zambia Quarterly Agricultural Statistical Bulletin, Vol. IV September/December 1975, (Lusaka: Statistics Section, Ministry of Rural Development) pp. 72-79.

extent, marketed beef, horticulture[1] and eggs, are also attributed to commercial farmers. The remaining production is carried out by an estimated 20,000 emergent farmers, 632,400 traditional farmers, 800 co-operative societies and approximately 50 production units. One explanation advanced for the upward spiral in food imports is the departure of expatriates engaged in commercial farming who numbered 1,200 at independence and are now down to an estimated 450. The estimates of the number of Zambian commercial farmers range from as few as 100 and up to 300.

The Specific Problem

> In the years to come our pre-occupation should be with transformation of our agriculture so as to achieve self-sufficiency in various food crops. This is the challenge for the District Councils. I want each District to produce enough for itself and surplus for export.[2]

The major purpose of this study is to explore and identify those factors which impede the effectiveness of delivery of and response to agricultural education by a selected group of traditional farmers in the Mpika District of the Northern Province of Zambia. In practical terms

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[1] Horticulture refers to the art of growing flowers, fruit and vegetables.

[2] "Address by his Excellency the President, Dr. Kenneth D. Kaunda to the three-day workshop on the Decentralized Local Administration, held at Mulungushi Hall, Lusaka, on Saturday, 24th January 1981." (Mimeographed.) p. 5.

this means does the education reach the farmers and if it does, what do the farmers think of it. The study does not measure the effectiveness of agricultural education vis-a-vis increased or improved agricultural output. The factors which have been identified for investigation in this study fall into three broad categories, which include: methods and content of agricultural education; organizational and logistical factors affecting agricultural education; and Government policy and financial factors which affect agricultural education.

Virtually all previous studies with educational components arrive at the same conclusion. The inferior quantity and quality of education available to the traditional farmer is part of the reason for the slow movement towards domestic food self-sufficiency in Zambia.

While a number of studies with educational components have been carried out on agriculture and farmers in Zambia, no study appears to have been done which explores and identifies the wide range of factors affecting agricultural education of the traditional farmer in Zambia.

Objectives. The primary objective of the instrument development phase of this study of agricultural education of traditional farmers was to:

Identify the factors which affect the effectiveness of delivery of and response to agricultural educa-

tion of traditional farmers in Zambia.

In addition, the research methods which were to be used in conjunction with the data from the interview schedules were identified.

The data collection and analysis phase of this study was based on the following specific objectives, which were grouped into three broad categories as follows:

I. Educational methods and content

1. Determine which methods of transmitting agricultural education have an effect on traditional farmers' learning and understanding of new knowledge and techniques in maize growing.
2. Determine what knowledge and skills about maize production are gained from non-formal agricultural education programs.
3. Identify factors which influence utilization of new knowledge and techniques in maize growing.

II. Logistical and organizational issues

4. Determine what small farmers feel are limitations on utilizing information they receive.
5. Determine how learning and utilization of new techniques with respect to maize are influenced by indicators such as frequency of

contact; areas to be covered; transport; levels of administration, etc.

III. Government policy and finance

6. Determine how Zambian Government policy toward agriculture influences the agricultural education of the small farmer.

7. Determine if funding priorities have an impact on most educational services available to the small farmer, including agricultural radio programs, agricultural publications, Farm Institutes, Farmer Training Centers, Research Stations and sub-stations and extension services.

> How does one Agricultural Assistant manage to cover all the other places as to have time and to teach me? Farmer--Mpika District, Zambia.[1]

This quote illustrates the problem of the lack of agricultural education through the extension service. It must be acknowledged that the traditional farmers inter-

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[1] K. Garvey, T. Muchenje, A. Sakala, C. Simuyemba, "Agricultural Education of Subsistence Farmers in Zambia With Special Reference to Mpika District, Preliminary Findings," (Lusaka: Rural Development Studies Bureau, University of Zambia, n.d.) (Mimeographed.) This paper was distributed and the findings presented at a seminar at the Rural Development Studies Bureau at the University of Zambia in April of 1980. Most of the data from this paper is presented in chapters V, VI and VII. From here on it will be cited as: K. Garvey et al., "Preliminary Findings. . . "

viewed appeared to be totally self-sufficient, even in salt, which was produced locally and sold in the Mpika market. Zambia is unique in Africa with its large urban population. The annual growth rate from 1969 to 1974 was 6.9 per cent for the urban population and 1.0 per cent for the rural population. When the President refered to surplus (see above quote) for export, he neglected to mention the huge urban population which must have food before the excess can be exported. Nevertheless, in Zambia in general, and in the Mpika District in the Northern Province in particular, the majority of the population consists of traditional farmers. There are no commercial farmers and only a few emergent farmers. The large urban population depends on the surplus produced by farmers or upon imports. In 1979, Zambia was forced to import 250,000 tons of maize. In 1980, this situation was exacerbated by drought and even more was imported.

One of the means by which the Government is trying to increase food production is through improved and increased agricultural education. President Kaunda, on 24th January 1981, in his address to a workshop on the implementation of the new plans for the decentralization of local administration in Zambia, declared that "the Ministry of Agriculture and Water Development is revamping what we are

now calling the National Extension Service."[1]

He went on to detail how the Party Ward Committee officials and members will work closely with agricultural extension offices in implementing the Lima Program and the Project: Operation Food Production[2] which are to be the main programs which will help to transform agriculture. It is hoped that these efforts will have a direct bearing on improved and increased output.

While this paper does not address itself to the link between increased and improved education and increased and improved agricultural output, it does examine the widely acknowledged problem of poor agricultural education in Zambia. Agricultural education is one of many factors which may affect agricultural output, but certainly not the only one. Again President Kaunda details the basic problems of the majority of Zambians, each one of which may have a direct or indirect bearing on agriculture.

> The requirements of our people are simple. They are basic issues that make their lives more worthwhile. They need peace. They also want more schools, more health centers, more water and better houses. They want more and better feeder roads and fast means of communications.[3]

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[1]Address by His Excellency the President, Dr. Kenneth D. Kaunda to the three-day workshop, January 24, 1981.

[2]See pp. 41-44 for the definition and discussion of these new initiatives.

[3]Address by His Excellency the President, Dr. Kenneth D. Kaunda to the three-day workshop, January 24, 1981, p. 4.

Maize is the staple of the majority of the 5.8 million Zambians, who consume approximately 60,000 tons every month. During the past 10 years, maize has been imported every year with the exception of 1973. The bulk of Zambian marketed maize is produced by commercial farmers. In 1979, only 3.7 million 200-pound bags of maize were produced and sold through official marketing agencies, at about K.15 a bag. This was half of the annual requirement of approximately 7 million bags per year.[1] At times, Zambia has been forced to use its precious foreign exchange to pay up to K.30 a bag for imported maize.[2] The link between maize and agricultural education is that Zambia's agricultural educational efforts have concentrated on promoting hybrid maize.

Scope and Limitations

Scope. The entire study is intended to provide (i) a generalized overview and (ii) an indepth view of agricultural education as it is perceived, by 33 men and 29 women from three separate agricultural camps in the Mpika District of the Northern Province of Zambia. The views of these traditional farmers were sought to enable a realistic assessment of the agricultural education available to them. In

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[1]Wellington Kalwisha, "Expected Bumper Maize Harvest, Action Needed," Zambia Daily Mail, 13 July 1981.

[2]Gregory Jaynes, "Zambian Military and Food Situation Growing More Acute," The New York Times, December 1979.

addition, insights were gained with respect to problems impeding self-sufficiency in food for Zambia and ideas for solutions were identified. The views of 80 children, 42 males and 38 females from the same agricultural camps, provide supporting information and insight into the overall picture of agricultural education in the three camp areas.

The extension staff, who were interviewed, included all the personnel employed in each of the three camps[1] (1 Mpika Main, 2 Chalwe, 1 Kopa). The total number was 28, of whom 25 were men and 3 were women. They are based at either the national headquarters (Lusaka); the provincial headquarters (Kasama); or at the district headquarters (Mpika). Eight extension training personnel were interviewed, including six men and two women. They were employed at the Farmer Training Center, Mpika headquarters and the Mungwi Farm Institute, Kasama.

Seven staff members from the Zambia College of Agriculture were interviewed, all men. Of 8 Provincial Agriculture Officers, 6 returned questionnaires which had been handed out at their biennial meeting.

Limitations. Data gathered and analyzed in this study are unique to the farmers and children in the Mpika District of the Northern Province of Zambia. This limitation must be

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[1]See page 26 for a definition of agricultural camps.

recognized before any interpretations, suggestions or inferences are made as to traditional farmers or all farmers in Zambia.

With respect to the extension staff, generalizations of research findings can be made cautiously as the structure, training and deployment of the staff are carried out on a national basis.

The responses of the staff of the Zambia College of Agriculture, Mpika, provide a body of data unique to that institution. If one were to make inferences from those data, it might be more relevant to generalize for all of Zambia rather than for Mpika District or the Northern Province. The background of the staff, almost without exception, was based on experience outside of the Mpika District or the Northern Province. Students from the College of Agriculture, Mpika, provide a unique perspective in that they come to the College from all over Zambia with experience usually limited to previous work as Commodity Demonstrators. The responses of the Provincial Agricultural Officers may be generalized for all of Zambia.

To determine the possible extent of the limitations on the data collected in the area around the Zambia College of Agriculture, Mpika, each farmer from adjacent villages was asked questions about the help he or she received from the College. With the exception of Chintu Block farmers, where there is a structured program with the College, all

the farmers maintained that the College was of no help with respect to agricultural education or production. A few, however, mentioned the clinic as being of benefit.

Based on the field experiences the methods for data collection could be improved vis-a-vis the objectives. For example, if more resources were available, a study over time of the Lima Program or the Operation Food Production might yield valuable data.

It should be noted that the extension officers--Agricultural Assistants responsible for each camp area accompanied us to the villages within their area of responsibility. This was necessary and helpful for a number of reasons. Zambians had been warned to look out for strangers so our reception in villages was greatly facilitated by the Agricultural Assistants.[1]

However, the presence of the Agricultural Assistants may have limited the results either negatively or positively, depending on their standing among the people of that particular village. In general we tried to overcome the possibility of this limitation by interviewing the farmers out of sight of the Agricultural Assistants. In a

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[1]Note: the security situation in Zambia was still quite tense. The outcome of the preparations for elections in Zimbabwe was awaited at that time. The reminders of the war were ever present while Zambia was busy raising funds trying to repair the roads and bridges destroyed during November and December of 1979. We were unable to travel to Kasama, the Provincial Headquarters by road (see map on page 24).

Figure 2. Map of Zambia showing the Provinces, and internal roads and railways damaged in 1979 (from United Nations Security Council Document S/13694 of 17 December 1979).

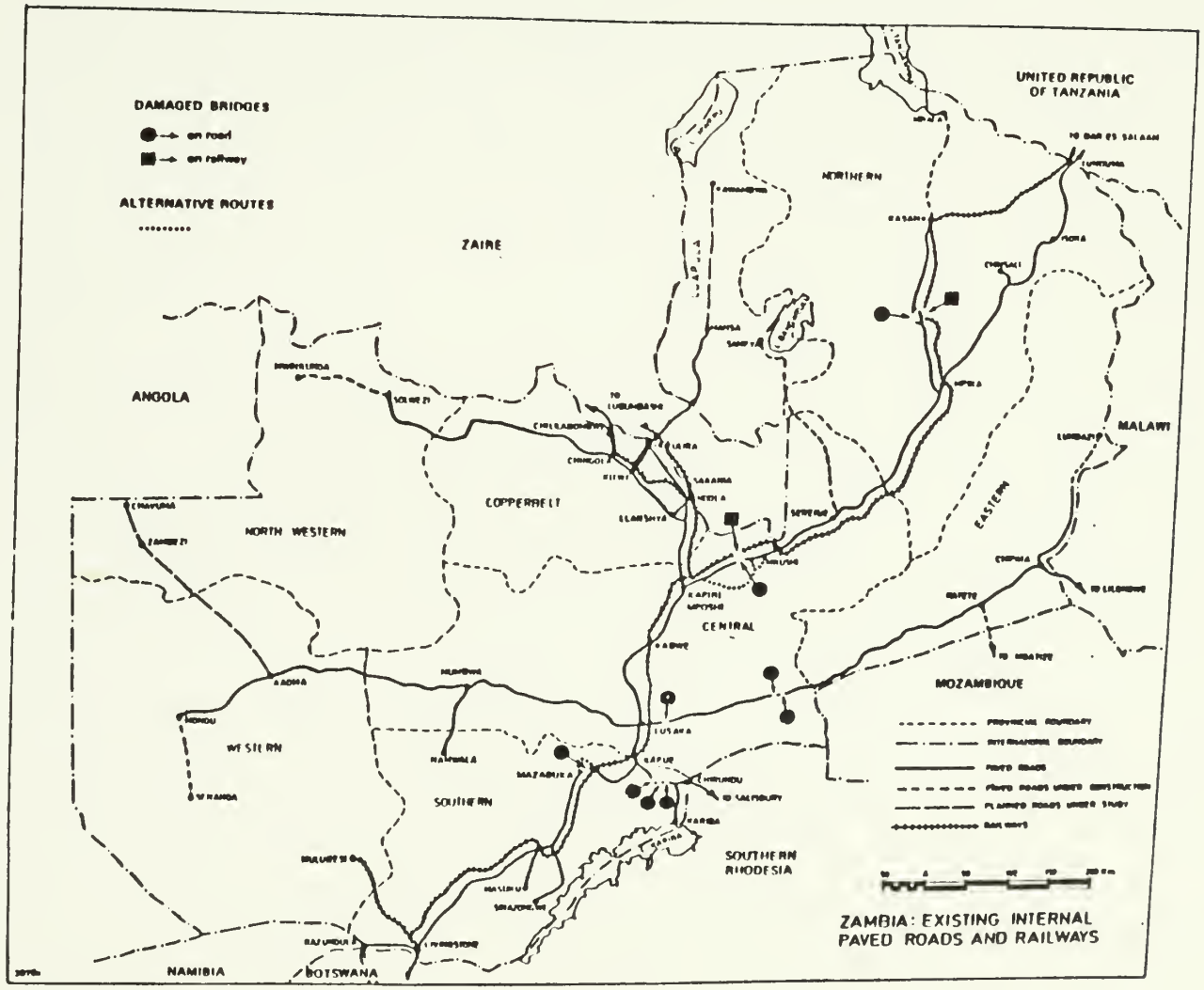
DAMAGED BRIDGES
on road
on railway
ALTERNATIVE ROUTES
UNITED REPUBLIC OF TANZANIA
ZAIRE
ANGOLA
MALAWI
COPPERBELT
NORTH WESTERN
NORTHERN
EASTERN
CENTRAL
WESTERN
SOUTHERN
MOZAMBIQUE
SOUTHERN RHODESIA
NAMIBIA
BOTSWANA
LUSAKA
ZAMBIA: EXISTING INTERNAL PAVED ROADS AND RAILWAYS

Figure 2.

few cases where the Agricultural Assistants were actually present, farmers did not hesitate to criticize them in their presence.

One series of questions caused discomfort. On questions of Government policy and finance, the free and frank demeanor of farmers quite often changed at this point to carefully-worded replies to questions. It had been agreed in advance with the research assistants that this section would be dropped if in the course of the discussion it would facilitate the interview.

During the period when questionnaires were developed and tested and during the field work, women were more difficult to approach and interview than men. In most cases the husband had to give permission before the woman would participate in the interview process. In about one quarter of the cases the women left before the interview was finished, often to prepare relish, pound sorghum or cassava, or attend to other duties. In some cases they returned after completing their work; but in a few cases where they did not return, we followed them to wherever they were working to finish the questionnaire. After a few of these experiences, it was felt that a team conducting interviews with a woman member was essential if any women farmers were to be interviewed.

Definitions

The following are definitions and discussions of terms which are used in this dissertation. They are arranged in alphabetical order for ease of reference with the exception of the extension staff who are categorized by level ranging from junior to senior under a sub-heading "Extension Staff."

Agricultural 'Camps'. Agricultural 'camps' or village 'camps' as they are sometimes called, are the administrative base for the Department of Agriculture extension staff who are responsible for all the farmers in their respective 'camp' areas. Usually there is one staff member per camp, often an Agricultural Assistant (AA), who may be supported by a commodity demonstrator (CD). The Agricultural Assistant uses the 'camp' as headquarters, though it usually also serves as his or her home. From this base, the AA provides advice to farmers on agricultural issues; acts as a link between the farmers and the residential training centers (Farm Institutes or Farmer Training Centers); the Agricultural Finance Company (AFC); and other government services and agencies. In the Northern Province there are 75 camps, each comprising an average of 496 square miles. In the Mpika district, there are 14 camps[1] and in the

[1]D.S. Sinyinza, District Agricultural Officer, Letter addressed to Miss Kristine Garvey. Further, at Chikakala there is no departmental house and the staff

country as a whole, 542.[1]

Agricultural education. Agricultural education is the process whereby new knowledge and/or techniques in the field of agriculture are transmitted or acquired by people.

Bemba. Bemba is the name of a tribe in Zambia who live mainly in the Northern Province. The agricultural tradition in precolonial times was secondary to hunting and gathering, supplemented by raiding into neighboring areas. During the colonial period and the post-colonial period, the citimene system of agriculture, supplemented by small-scale hoe cultivation and gathering, remained the predominant livelihood of most people in rural areas.

Bisa. Bisa is the name of a tribe in Zambia who live mainly in the Northern Province. The Bisa are "Bemba speaking"

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member lives in his own house. There are three existing camps without staff, Mupamadzi, Mabouga and Lufila, and the total of additional camps needed is five including Lukulu, Mukungule, Mwelushi, Mbati and Kabinga. The District Agricultural Officer also proposed that the four district zones should be expanded from four to five. The five sub-district offices or stations should be in five district zones which include: (1) Chalabesa; (2) Mpika Main; (3) Chipundaponde; (4) Lukulu; and (5) Mukungule. The purpose of the sub-district offices is to have a station or office with staff at a high level like Senior Agricultural Assistant or Technical Officer who would each be responsible for supervising staff in each zone.

[1]David Honeybone and Alan Marter, An Evaluation Study of Zambia's Farm Institutes and Farmer Training Centers, (Lusaka: Rural Development Studies Bureau, University of Zambia (UNZA), 1975), pp. 18-19.

and follow Bemba customs. Chief Kopa is recognized as the senior chief. The Bisa differ from the Bemba in that they do not have the strongly centralized chiefly system of the Bemba, each Bisa family retains its own line of succession.

Centralized training centers. There are four centralized training centers located throughout Zambia. Each concentrates on one topic, viz: horticulture, poultry, mechanization, or dairy and beef.

Citimene. This term refers to the system of agriculture (the garden itself is Chitemene) whereby the staple crop of millet is grown in a large circle filled with ash created by burning. The gardens are often some distance from the village. This method of agriculture is often criticised for contributing to deforestation and is officially discouraged in Zambia. Nevertheless, it is still practiced throughout the Northern Province.

Crop year. The agricultural crop year is 1st October to 30th September.

District. In Zambia, there are 53 districts. In the Northern Province, there are 7 districts.

Extension education. The following definition is presented as an ideal, but does not systematically reflect the policy for extension education of the Republic of Zambia, Depart-

ment of Agriculture. The differences between this "ideal" definition and the actual practices in Zambia are discussed in Chapter V.

Extension education is farmer education for development. The teaching methods most commonly used include: conversations during visits to the home and farm; method demonstrations; result deomonstrations; group meetings; residential training at Farm Institutes or Farmer Training Centers; farm tours; exhibits and fairs. The effectiveness of farmer education programs may well depend on whether the following principles are observed:

> It must go to farmers where they are; it must be specific to farmers' present interests and needs; it must respect the fact that farmers are adults; it must be fitted into times when farmers are not too busy; the unit of instruction for teaching and learning must in most cases be a particular new or changed practice; it must be accompanied by immediate opportunities for farmers to try out the new methods taught; each new or changed practice proposed must be technically sound and economically profitable; farmers need encouragement to experiment.[1]

Extension staff.

Commodity demonstrators. Day-to-day contact with farmers is carried out by an estimated 700 commodity demonstrators, who are stationed at the village 'camps' throughout Zambia. Salaries of Commodity Demonstrators were K.40

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[1]Arthur T. Mosher, Getting Agriculture Moving. Essentials for Development and Modernization, (New York: Frederick A. Praeger, 1966), pp. 129-31.

per month until 1980 when they rose to K.70 per month.[1] Commodity demonstrators are recruited at the Form III level (equivalent to the second or third year of high school in the United States). They have to pass an ability assessment test and then undergo a twelve week induction course in agriculture and afterwards spend some time in the field on a probationary basis before beginning a two-year course at the Zambia College of Agriculture in Mpika or Monze.

Agricultural assistants. Agricultural assistants, who number about 519 for the whole country, are usually based at village Camps. Prior to 1980, their monthly income was K.79 per month which rose to K.116 in 1980.[2] Agricultural Assistants are usually recruited at the Form III level (equivalent to the second or third year of high school in the United States). They have to pass an ability assessment test and then undergo a twelve week induction course and then serve what is in effect a probationary period as commodity demonstrators before beginning a two-year course at the Zambia College of Agriculture in Mpika or Monze.

Senior agricultural assistants. Agricultural assistants may be promoted on the basis of experience to the

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[1] K.40 is equal to US $33.60 and K.70 is equal to U.S. $58.80 calculated at the official UN rate of .84 for April 1981.

[2] K.79 is equal to US $66.36 and K.116 is equal to US $97.44 calculated at the official UN rate of .84 for April 1981.

post of Senior Agricultural Assistant. There are an estimated total of 336 in Zambia who supervise the Agricultural Assistants at the sub-district level. Their salary is K.122 per month; it remained static in 1980, a period when other salary levels within the extension service were raised.[1]

Supervisors. Supervisors, who number an estimated 228, are responsible at the district level (there are 53 districts in Zambia) for all the Commodity Demonstrators, Agricultural Assistants and Senior Agricultural Assistants in their District. They may also serve as Specialist Officers in poultry or training and others may serve as the principals for the Farm Institutes. Their education level before beginning a three-year diploma course is 'O' levels with a Cambridge Certificate (which corresponds to a high school diploma in the United States).

Principal agricultural supervisors. On the basis of experience, supervisors may rise to the level of Principal Agricultural Supervisors, of whom there are 21 in the Department of Agriculture. Their monthly salary ranges from K.368 to K.428, and there was no change in 1980.[2]

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[1] K.122 is equal to US $102.48 calculated at the official UN rate of .84 for April 1981.

[2] K.368 to K.428 is equal to US $309 to US $384.72, calculated at the official UN rate of .84 for April 1981.

Chief agricultural supervisors. The Principal Agricultural Supervisors may rise to the rank of Chief Agricultural Supervisor. There are 3 people with this rank in the Department and their monthly salary ranges from K.443 to K.475.[1]

Professional officers. There are approximately 61 Professional Officers who work as Specialist Officers in the Provinces. They are university graduates who specialize in such areas as horticulture, crops, farm management and animal husbandry. Their earnings range from K.274 to K.527 per month.[2]

Factor. A Factor is one of the elements contributing to a particular result or situation.

Farmers. The variety of definitions applied to Zambia's farmers can usually be grouped into two categories. Some differentiate farmers on the basis of household resources, types of crops, amount of land and value of sales, while other include a subjective element of motivation.

Traditional farmers. Traditional farmers in Zambia, for the purpose of this study, are defined by the author as those farmers who cultivate up to two hectares, usually

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[1]K.443 to K.475 is equal to US $372 to US $399, calculated at the official UN rate of .84 for April 1981.

[2]K.274 to K.527 is equal to US $230 to US $442.68 calculated at the official UN rate of .84 for April 1981.

subsistence crops only, resulting in very little surplus, if any, for cash sale. They may or may not have beef cattle.

Traditional farmers are usually self-sufficient and often looked down upon by those friends, relatives, countrymen and outsiders who have become accustomed to and dependent upon western style amenities and material possessions. They are often characterized as "'lazy beery villagers',"[1] and this attitude has found its way into definitions of farmers and even into criteria for measurement of modernization and categories of adopters of innovations.[2]

The Universities of Nottingham and Zambia Agricultural Labour Productivity Investigations (UNZALPI) distinguished between 'farmer' and 'villager' in their study. 'Villagers' are defined as those who do not care about cash income and 'farmers' are defined as those who are interested in cash income, whether or not they succeed in earning it.[3]

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[1]C. Stephen Lombard and A.H.C. Tweedie, Agriculture in Zambia Since Independence, (Lusaka: National Education Company (NECZAM) for the Institute for African Studies, University of Zambia (UNZA), 1974), p. 64.

[2]For discussions of motivation as part of the criteria and measurement of modernization and Diffusion of Innovations, see Chapter III and also E. Rogers and R. Burdge, Social Change in Rural Societies, (New York: Appleton-Century-Crofts, Meredith Corporation, 1972).

[3]C.M. Elliot, J.E. Bessell, R.A.J. Roberts and N.

In a study of the local politics of rural development, a distinction was made between villagers and emergent farmers. If a farmer sold more agricultural surplus than he kept for home use and cultivated two hectares of land or more, he was considered an emergent farmer. From this particular study it was found that those farmers with the above characteristics were more likely to have used fertilizer, improved seed and chemical insecticide and to have accepted credit from the government. These farmers defined as emergent were also not likely to have chitemene gardens, but were likely to grow maize, beans, groundnuts and vegetables for the market. The traditional farmers or villagesr were characterized as those cultivating less than two hectares of subsistence staples such as cassava or millet. The hoe was likely to be used and most maintained one or more chitemene gardens.[1]

In his study of maize farmers in Zambia, Kasapu used very precise details in his classification of farmers. These included: size of farm; farming activity; and average yield per hectare in physical terms. Specifically:

Vanzetti, Some Determinants of Agricultural Labour Productivity in Zambia, (Universities of Nottingham and Zambia Agricultural Labour Productivity Investigation (UNZALPI), Report No. 3, November 1970).

[1]Michael Bratton, The Local Politics of Rural Development Peasant and Party-State in Zambia, (Hanover, New Hampshire: University Press of New England, 1980), p. 91.

1. Family farms: Subsistent or emergent. Less than 4 hectares under maize. Yields in normal season 15, ninety kilogram bags per hectare.

2. Small scale commercial: 4-24 hectares. Yields in normal season 25 bags of 90 kilograms each per hectare.

3. Medium scale commercial: 25-50 hectares. Yields in a normal season, 35 bags of 90 kilograms each per hectare.

4. Large scale commercial: Over 50 hectares (also state and corporate farms). Yields in normal season 45 bags of 90 kilograms each per hectare.[1]

Another author commented that a variety of writers classify farmers in Zambia as traditional and commercial, while others classify them as to levels of management "learner management, improved management and excellent management."[2] Still another classification used by the Ministry of Rural Development in its loan application appraisal to the Mixed Farming Development Project, includes:

a. Large scale: Mainly commercial. Over 250 acres of arable land. 60-125 head of dairy cattle or over 200 head of beef cattle.

b. Medium scale: Mainly commercial. 60-250 acres of arable land, based on a one or at least two tractor unit with an additional 25-1000 acres of grazing land.

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[1]Timothy Kasapu, Economic Efficiency in Maize Production of Small Scale Farmers in Zambia, (Lusaka: Ministry of Rural Development, 1974).

[2]E.G. Nadeau, "Peasant-Based Agricultural Development: Problems and Prospects in Zambia," (Ph.D. dissertation, University of Wisconsin, 1977), pp. 10-13.

c. Small scale: Mainly mixed farmers. 10-60 acres of arable land. Dependent on oxen for draft power. 100 to 300 acres of grazing land.

Emergent farmer. For the purpose of this study, emergent farmers or small-scale farmers are defined as farmers who usually have from 2 to 10 hectares under cultivation. They are characterized as having a small surplus of cash crops and are generally thought to be receptive to increasing surplus production.

In a study completed in 1975, emergent farmers were cited as the main agent of agricultural innovation. The study cited the "selective national strategy" of 'building the best'. This is confirmed and continued in the Third National Development Plan,[1] which refers to classification of agricultural sectors as a basis for its grouping of farmers into the following categories: (the emphasis on emergent farmers is clear)

(i) traditional subsistence farmers;

(ii) emergent farmers; and

(iii) commercial farmers.[2]

The emergent farmers, termed the "most important group in

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[1]The First, Second and Third National Development Plans will from here on be referred to respectively as: FNDP, SNDP and TNDP.

[2]Republic of Zambia, Office of the President, National Commission for Development Planning, Third National Development Plan 1979-83, (Lusaka: The Government Printer, October 1979), p. 144.

restructuring Zambian agriculture,"[1] are further subdivided into the following categories:

(i) 'Middle-size'[2] emergent farmers are those farmers who rely on mechanized ploughs, labor, who have developed management and technical skills and who produce almost everything for the market.

(ii) 'Organized small-scale'[3] farmers are those farmers who are living on government settlement schemes and rural reconstruction centers.

(iii) 'Improved village'[4] farmers are those who rely on draft animals and hand labor for cultivation.

Commercial farmers. For the purposes of this study, and generally in Zambia, commercial farmers are classified as those farmers producing 70 per cent to 80 per cent of marketed agricultural production and with incomes of K.10,000 per year and twenty or more acres under cultivation.

However, a number of other definitions are used by a variety of institutions and in different publications. In a 1968 report on a survey of commercial farmers, the

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[1]Republic of Zambia, Office of the President, National Commission for Development Planning, Third National Development Plan 1979-83, (Lusaka: The Government Printer, October 1979), p. 144.

[2]Ibid., p. 144.

[3]Ibid., p. 144.

[4]Ibid., p. 144.

following definition was used: ". . . a 'Commercial Farmer' has been defined as one who satisfies at least one of the following three criteria in respect of the agricultural activities during the year ended September 1966, i.e., the agricultural year preceding the one to which this enquiry relates:

(i) A farmer who sold maize worth K.1,200 or more at the line-of-rail prices.

(ii) A farmer who grew burley or Virginia tobacco.

(iii) A farmer who sold dairy products to the Dairy Produce Board.

In 1969, the same definition was still in use with the following exceptions: The value of maize was reduced to K.600 at the line-of-rail prices; those farmers who grew tobacco had to be registered with the Tobacco Board of Zambia; and those who sold dairy products had to be registered with the Dairy Produce Board. One additional criterion was a farmer who had title to land.

Farm household. Farm household is defined as a household where at least some agricultural activities take place.[1]

Farm Institutes and Farmer Training Centers. These are residential centers which respectively but not necessarily exclusively cater to staff and farmers. For Farm Institutes

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[1]Central Statistical Office, Census of Agriculture 1970-71, (Lusaka: Central Statistical Office, June 1977), pp. 3-4.

the policy is to have one in every province with the exception of Lusaka Province and for Farmer Training Centers the policy is to have one in each district.

Field crop plot. These field plots are usually larger in size than a home garden. They often contain cash crops, such as hybrid maize, vegetables or sunflower, and are maintained by men with support from their wives and families. Usually, they are cultivated entirely by hoe. Occasionally, depending on availability and the size of the plot, a tractor may be used to first break the soil. Labor is often hired for initial stumping of land and may be hired for different stages, such as planting, weeding and harvesting.

Formal education. Formal education is the "highly institutionalized chronologically graded and hierarchically structured 'education system' spanning lower primary school and the upper reaches of the university."[1]

Home garden. Chitemene gardens are often supplemented by, and sometimes replaced by, a combination of field crop plots and home gardens. Home gardens are usually maintained by the women and are found close to the village. They are hoe cultivated gardens with cassava, maize, beans,

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[1]P.H. Coombs and Manzoor Ahmed, Attacking Rural Poverty: How Non-Formal Education Can Help, (Baltimore: The Johns Hopkins University Press, 1974), pp. 8-9.

groundnuts, sweet potatoes and vegetables.

Household. A household is defined as a group of persons who normally eat from a common kitchen and live together.[1]

Humanism. Humanism is the ideology of Zambia as Ujamaa is the ideology of Tanzania. Humanism is based on the ideal that people are the center of society. While people may be instruments for economic and social change, they are also an end for that change.[2]

Kwacha. One kwacha, K1, is equal to $1.20 at the January 1980 U.N. exchange rate of .83. The official U.N. rate of .84 for April 1981 is also used mainly to calculate the dollar rate for extension staff salaries.

Labor. Traditionally, the Northern Province has served as a labor reserve for the copper mining industry. The copper mining industry provides the chance for paid urban employment and has had the effect in the Northern Province of perpetuating underdevelopment because of the ongoing labor migration. The result of the migration is that the young, the elderly, and females remain in the Province, while labor intensive agriculture suffers.

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[1]Central Statistical Office, Census of Agriculture 1970-71, pp. 3-4.

[2]J.B. Zulu, Zambian Humanism, (Lusaka: Zambia Printing Company, 1978), pp. 6-7.

Lima Program. Lima means plough in many Zambian vernacular languages. The Lima extension training and research project includes four components. The first is the Lima which is defined as a unit of land comprising one-quarter of a hectare. Each extension officer is supposed to be equipped with a 25-meter rope for field measurement. It is envisaged that farmers may also buy or make and use their own rope. The second component is the simplification of crop recommendations. This entails the use of a measuring beaker for fertilizer and herbicides to enable the farmer to accurately measure the inputs required for one Lima. Further inputs, such as fertilizer, would be sold in lima-bags to relevant groups of farmers. Previously, traditional farmers were unable to purchase and use large bags of seeds and fertilizer, which were inappropriate for the size of individual plots. The third component involves systematic visits by extension officers as well as continuous upgrading programs for these officers. The fourth component is a continual research program to help determine the best farming systems and crop recommendations for traditional villages.

Line of rail area. Line of Rail refers to an area twenty-five miles on each side of the railway line in Zambia. Specifically, the line passes through the Southern, Central and Copperbelt and Northern Provinces. It is here

that the most important markets are found and farmers within the line of rail area tend to have an advantage over those villagers who are some distance from transport and markets.

National Extension Service. The Extension Branch of the Department of Agriculture within the Ministry of Agriculture and Water Development is primarily responsible for agricultural education of all types of farmers. The extension branch is responsible for both residential agricultural education at the Farm Institutes and Farmer Training Centers and daily contact with farmers at the level of the farm and village. Daily contact is carried out through extension officers based at the village 'camps', the headquarters for the extension staff.

For the purposes of the National Extension Service, farmers are categorized as subsistence, emergent or commercial. Implicit in these definitions is the idea that agriculture in Zambia can be compared with a ladder. The subsistence farmers are at the bottom and the commercial farmers are at the top, and all farmers have an equal chance to move up the farming ladder, given time, knowledge, skills, credit and markets.

Policy guidelines for the National Extension Service are provided by programs such as the Operation Food Program and the Lima program, which utilizes the Training

and Visit system. There is an implicit policy of concentrating extension service efforts on emergent farmers rather than the commercial farmers, who don't need advice or assistance, and subsistence farmers, who don't want or won't use advice or assistance. While this is not an articulated policy, except in the TNDP, where emergent farmers are highlighted, it seems to have lingered from the mid-1970's when for a while it was the policy of the "agrarian revolution" campaign of UNIP.[1]

Non-formal education. Non-formal education is the term used for any educational activity, systematic and organized, which is carried on outside the formal school systems and which provides selected types of learning to particular sub-groups in the population, such as adults. Programs discussed in this dissertation which come under this defintion include those of Farm Institutes and Farmer Training Centers, extension services, young farmer clubs and efforts such as Radio Farm Forum educational programs.[2]

Project: Operation Food Production, 1980-1990. Operation Food Production was launched in 1980 after approval by the Central Committee of the ruling party, United National

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[1]Michael Bratton, The Local Politics of Rural Development, Peasant and Party-State in Zambia, p. 45.

[2]P.H. Coombs and Manzoor Ahmed, Attacking Rural Poverty: How Non-Formal Education Can Help, (Baltimore: The Johns Hopkins University Press, 1974), pp. 8-9.

Independence Party (UNIP) and the Cabinet. The program is a combination of concrete plans which are designed to effect implementation of the philosophical objectives of humanism within the constraints of Zambia's financial, manpower, scientific and technological resources.

The program will be carried out as follows: (1) Two large-scale commercial State Farms of an average 20,000 hectares each will be established in each Province; (2) The Rural Reconstruction Cooperative Centers will be "re-invigorated" so that each will have a minimum of 1,000 hectares and will be properly located near water and on rich soils; (3) The Zambia National Service would be revitalized to make it economically viable; (4) Producer cooperatives will be developed throughout the country; (5) Family and peasant farms will be regrouped or cooperation or those in the vicinity of one another will be increased by encouraging pooling of resources together for the common good of the community through such things as common funds, common dipping tanks, and common marketing facilities; (6) Demonstration programs for subsistence farmers will be established by commercial farmers on their farms.[1]

Relish. Relish is the term used to describe food such as vegetables, meat or fish which is prepared to accompany any

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[1]Republic of Zambia, State House, Project: 'Operation Food Production' 1980-1990, (Lusaka: State House, 23 May 1980), pp. 2-8.

starch staple, such as rice or porridge made from sorghum, maize or cassava.

Selected crops grown in Zambia.

Beans. Beans are grown throughout Zambia and are a rich source of protein. In addition to being used as a cash and barter crop, they are eaten either fresh or dried and cooked as a relish.

Cassava. Cassava is grown in most of Zambia. It is usually a supplement to other staples such as maize, sorghum, millet and groundnuts. Both the root tubers, rich in carbohydrates, and the leaves, which are rich in vitamin C, are soaked by women to remove the cyanide and used to make a flour which is prepared as porridge to accompany relish.

Groundnuts. Groundnuts, called peanuts in the United States, are grown throughout Zambia. They are highly nutritious. They are a valuable cash crop for export and are used in the manufacture of cooking oil, margarine and animal foodstuffs.

Sunflower. Sunflower is increasing in importance in Zambia as a cash crop, as a source of protein, for processing as cooking oil and margarine and as an animal feed.

Sweet potatoes. Sweet potatoes are grown throughout Zambia; they are very popular as food and have an advantage over other crops in that they can be stored

throughout the dry season without shriveling.

The training and visit system of extension. This extension system was developed by Daniel Benor and has been introduced in a number of countries, chiefly in projects assisted by the World Bank. The system has been used in areas where there are many farmers, usually on small farms using low-level technology and traditional methods. In the beginning, the extension service concentrates on major crops which will show impressive results. Village level workers who may have low educational background, participate, but they are supported by subject matter specialists. Both are provided with close supervision through a management structure which establishes a clear single line of responsibility. The village-level workers are given regular training in the production methods which they teach. By concentrating on a few major crops, the contrast of impressive results with the traditionally grown crops has a good impact, both on the farmer and the extension workers. Continual follow-up visits by specialists, village-level extension workers and other agricultural extension staff have a very positive impact.[1] It is one of the components of the Lima program and is being promoted throughout the extension service in Zambia.

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[1]Daniel Benor and James Q. Harrison, Agricultural Extension, the Training and Visit System, (Washington, D.C.: The World Bank, May 1977), pp. vii, viii, and 41-48.

Tsetse flies. Tsetse flies are found in various parts of Zambia and are a serious insect pest. They cause both sleeping sickness in humans and trypanosomiasis in cattle and other domestic animals. They are numerous in many parts of the Northern Province, including the Kopa camp area, visited in the course of this study where no livestock can be kept.

UNIP. United National Independence Party (UNIP) is the only party in Zambia, a one-party state. In 1964, at independence, UNIP was characterized as having "both mobilized and controlled (a) substantial following in the country and maintained (b) prodigious party organization."[1]

On the village level, the Village Political Committee (in urban areas called a Section Committee), is the political counterpart to the Village Productivity Committee. In the party administrative hierarchy, party branches come under the Village Political Committees. Provisions in the UNIP Constitution are flexible as to the formation of party branches. " . . . 'a branch may cover a big village, a local government area of a ward . . . provided that no branch shall consist of less than thirty paid up members'."[2]

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[1]Michael Bratton, The Local Politics of Rural Development, Peasant and Party-State in Zambia, p. 191.

[2]Ibid., p. 230.

Units of measure. The general rule is that "a bag" of agricultural goods, including maize, sorghum, millet, legumes, etc., weighs 200 lbs. Exceptions to this net weight per bag per item includes the following:

Barley, Buckwheat and Oats	150 lbs.
Sweet Potatoes	120 lbs.
Sunflower and Castor Beans	125 lbs.
Groundnuts (unshelled)	65 lbs.
Groundnuts (shelled)	180 lbs.
Cassava (Meal)	180 lbs.
A pocket of Potatoes	37½ lbs.
A pocket of Onions and Oranges[1]	30 lbs.

Village. In Zambia, the village is the fundamental unit of political and administrative organization in the rural areas. In the Registration and Development of Villages Act (Z 1971) a village is described as a settlement with a minimum of twenty households, usually under the authority of a headman.

Village productivity committee. Village Productivity Committees are supposed to be a multi-purpose development unit designed to provide a "forum both for the expression of local demands and for the enforcement of central

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[1]Republic of Zambia, Central Statistical Office, Agricultural and Pastoral Productions, 1966-67, p. vi.

policies."[1]

In 1971, the scope of the Village Productivity Committees was expanded to include a total of ninety tasks. The original function was to expand the agricultural output of farmers and move them from subsistence agriculture to market-oriented agriculture. Included among the ninety tasks were the following: "setting up an administrative center in the village, teaching Humanism, maintaining security, fighting crime, controlling drinking . . . supplying water for agricultural and domestic uses, ordering farm requisites, repairing farm equipment, arranging for the marketing of produce, designing 'school-leaver' projects, and building roads, schools, clinics and community center."[2] The resources available to the villagers are self-help because available Government resources are so limited.

The membership of the Village Productivity Committee is composed of six to ten village people who are elected by their fellow villagers for a three-year term. The Chairperson is automatically the village headman "'by virtue of his traditional status'".[3]

Village Productivity Committees are required by law. In 1972, Committee members were first elected, and

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[1]Michael Bratton, The Local Politics of Rural Development, Peasant and Party-State in Zambia, p. 37.

[2]Ibid., p. 39.

[3]Ibid., p. 38.

from then on a committee was deemed active if it met any of the following three criteria: (1) the VPC met at least once a year; (2) the minutes of a meeting were recorded and sent to the Ward Development Committee; or (3) a village development project using communal labor was in process.[1]

Ward Council and Ward Development Committee. The Ward Development Committee carries out the detailed day-to-day business of the Ward Council. Its ten members are elected by and from the Ward Council for three year terms. The functions of the Council and Committee are virtually identical to those of the Village Productivity Committee, but they are empowered to supervise and coordinate the work of the Village Productivity Committee. Two members of the Village Productivity Committee, the Chairperson and one other, are members of the Ward Council. Since they are responsible for the provision of social infrastructure in all aspects of education, health and social welfare, along with controlling the local economy, they are really engaged in development planning for all the villages in their ward.

One distinction between the Ward Development Committee and the Ward Council is that the former was intended to be a "powerful executive" body at the local level. In this respect the committee was given more powers than the

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[1]Michael Bratton, The Local Politics of Rural Development, Peasant and Party-State in Zambia, p. 90.

Council, which often acted as a rubber stamp for the Ward Development Committee decisions.

With respect to agriculture, both are "supposed to convert government agricultural policy into a production strategy suitable for ward; this involved choosing suitable cash crops or other productive enterprises, setting ward production targets, and mobilizing people to meet them."[1] The Ward Development Committee, in particular, was responsible not only for identifying projects, but also for ensuring implementation of those projects.

The Chairperson of the Ward Development Committee is the ward councilor, who is elected by the people for a seat on the Rural Council. He or she is also chairperson of the Ward Council, and his or her responsibilities include calling meetings of the Ward Council and Ward Development Committees and exercising a casting vote over both the Council and Committee. He or she is also responsible for keeping the Council and committee informed of the decisions of the Rural Council and District Governor.

Overview

Chapter I covers the introduction, which includes the focus, general and specific problem statements, objectives, scope and limitations and definitions.

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[1]Michael Bratton, The Local Politics of Rural Development, Peasant and Party-State in Zambia, pp. 38-40.

Chapter II covers the research methodology and Chapter III provides a review of relevant literature. Chapter IV contains descriptions of the research sites and people who were interviewed. Chapters V, VI and VII contain a presentation of the results of the field research, Chapter VIII reviews the results of the use of the computer, which was used to determine which variables were most closely linked to hybrid maize, and Chapter IX covers a summary of the study, policy recommendations and conclusions and recommendations for further research. Appendix I includes all of the interview schedules. Appendix II contains the Zambia College of Agriculture, Mpika proposals for relations with villages surrounding the college.

C H A P T E R I I

METHODOLOGY

"The fundamental question is who has the right to create knowledge?"[1]

Explanatory Study

This explanatory study was designed to identify, through collection of non-experimental data, the factors which affect the delivery of and traditional farmers receptivity to non-formal agricultural education. Particular emphasis is placed on interviews with farmers and extension staff in the Mpika District. Hybrid maize, an important starch staple, is used as the dependent variable in the regression analysis.

This study covers a broad variety of institutions, services and people whose work affects agricultural education. These include: the Department of Agriculture extension service staff based at Chalwe, Mpika Main and Kopa agricultural camps; the staff at the headquarters, provincial, district headquarters offices; the community development department; the research stations, the rural informa-

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[1]Bud L. Hall, "Creating Knowledge: Breaking the Monopoly Research Methods, Participation and Development," Working Paper No. 1. (Toronto: Participatory Research Project, International Council for Adult Education, n.d.), p. 3.

Figure 3. Northern Province of Zambia, Mpika District, Agricultural Camps. The three without staff include Mupamadzi, Mabonga, and Lufila. The five additional camps required are Mbati, Kabinga, Lukulu, Mukungule and Mwelushi. Source: District Agricultural Officer.


Mpepo
Mbati
Chalabesa
Kabinga
Chikakala
Lufila
Chalwe
Mukungule
Kopa
Luchembe
Mpika Main
Chisanga
Chishibesonde
Chilanga
Mwelushi
Mufubushi
Chiundaponde
Mpumba Camp
Mabonga
Kalonje Camp
Mupamadzi
Lukulu
Legend
Roads
Zone Lines
1 : 1,500,000 Scale

Figure 3.

tion services, the Farm Institute at Mungwi and the Farmer Training Center at Mpika and the Zambia College of Agriculture, Mpika.

The proposal for the study was developed in 1979 as a result of discussions with individuals at the University of Zambia's Educational Research Bureau; at the School of Agriculture and Rural Development Studies Bureau; and in the Department of Agriculture extension branch in the Ministry of Agriculture and Water Development. The individuals consulted provided insights and details which helped to focus the study on relevant needs and problems. Simultaneously, other studies, including those with discussions of agricultural education in Zambia, were examined both when the proposal for this study was developed and to enable contrast and comparison with the results of this study. Participant observations were also used.

There was one outstanding deviation from the original proposal. It had been planned to visit, for comparison purposes, two provinces, one developed and one undeveloped in terms of marketed agricultural production. The change to research in the Northern Province was due to the tensions in Zambia, which were a result both of the bombings by the Smith regime in Zimbabwe, then Rhodesia, and the strains connected with the process leading to the elections scheduled in Zimbabwe for April 1980. The Rural Development Studies Bureau was continuing its own research in the

Mpika District and their staff advised that it was better to go where they had contacts and where their own research efforts were continuing.

Instrument Design Procedure

Participatory research. Examination of this broad range of people, institutions and services was the only way to carry out practical research. The complexity of the problems with non-formal agricultural education cannot, I am convinced, be fully understood by a non-Zambian researcher. Nevertheless, by combining a variety of research methods and techniques, a picture of the problems and practical solutions can be pieced together.

In this connection, I wholeheartedly associate myself with the research goals stated by Kathleen Rockhill:

> (1) The concern that quantitative research methods are not providing an adequate understanding of complex reality;
>
> (2) The desire for 'practical' research that can be used as a base for setting policy and developing programs which will promote social justice and self-reliance;
>
> (3) A humanistic view of human behavior which sees individuals as active agents in their environments rather than as passive objects to be researched.[1]

Point three is of particular interest. Throughout the field research process the approach with farmers was

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[1]B.L. Hall, "Creating Knowledge . . . ," p. 2.

conversational. Care was taken, through a team-work effort on the part of my research team to ensure that one person kept eye contact and kept the discussion going with the farmers while the other person wrote the answers on the questionnaire. The same applied, though not so rigidly, with children, extension personnel and others.

Interview schedules. A number of identical questions were asked of farmers, children and the extension and Department of Agriculture staff. There are approximately 50 questions per questionnaire and they are divided into: I. Background Information; II. Educational Methods and Content as they affect Agricultural Education; III. Logistical and Organizational Questions as they affect Agricultural Education; IV. Government Policy and Finance as its affects Agricultural Education; and V. General Open-ended Questions. Seventeen of the questions were the same for every adult respondent to enable comparison of responses. The questionnaire for children had only a total of 14 questions. See Appendix I.

The questionnaires were developed on the basis of library research, consultation with officials of the Department of Agriculture, and University of Zambia staff in the School of Agriculture, Department of Rural Sociology, and Rural Development Studies Bureau.

The farmers' questionnaires were tested on two

occasions in the nearby Chamba Valley. The testing exercise was also used as an opportunity for training the students who had expressed interest in working as research assistants. Revision of the interview schedules was also based on their observations of the questions.

TABLE 6

SAMPLED POPULATION

	Questionnaire	Sample		
		Male	Female	Total
A.	Traditional Farmers[1]	33	29	62
B.	Children of Farmers	42	38	80
C.	Extension Personnel	33	6	39
D.	Extension Training Personnel	6	2	8
E.	Zambia College of Agriculture staff	7	--	7
F.	Provincial Agricultural Officers[2]	6	--	6

In addition to the use of questionnaires as a focal point for interviews, a number of interviews and conversations were carried out with villagers, chiefs and headmen, extension personnel and Government personnel in departments

[1]Note: Two emergent farmers were dropped from the study, bringing the total sample from 64 to 62. These farmers had incomes of over K.1000 but under K.10,000 and were marketing their produce regularly. The crops grown were cash crops such as hybrid maize, citrus fruit and vegetables. Both kept cattle.

[2]There are a total of nine provinces in Zambia.

which were related.

Choice of population. Within each village visited the choice of people to be interviewed was based on the following: the chief and then the headmen and/or his wife were usually interviewed first; thereafter an effort was made to interview equal numbers of men and women. The choice of farmers depended on who was available and willing to be interviewed. Among the children an effort was made to interview an equal number of boys and girls. Those below seven were excluded as being too young to have opinions on many of the questions; and those unmarried and still living at home with parents were interviewed, no matter what age or sex and whether or not they had children of their own.

We chose respondents resident in small houses made of natural materials, including wood, grass roofs, mud and fibre. We avoided respondents resident in large brick houses with metal doors, window-frames, and glass windows,[1] assuming them to belong to the category of emergent or commercial farmers. This might have limited the exercise; some of those excluded may have been retired people, now working as traditional farmers (our target group), who had saved money and invested in such houses.

All the farmers were asked what type of farmer they thought they were, and then what type of farmer they would

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[1]There were very few of these; this statement applies mainly to the Mpika Main Camp area.

like to be. It is interesting to note that 92% think they are subsistence farmers and 86% would like to be either a commercial or emergent farmer.

TABLE 7
WHAT TYPE OF FARMER ARE YOU?
N: 64[1]

Farmers	Male	Female	Total	%
Commercial	0	0	0	0
Emergent	2	0	2	3
Subsistence	33	29	62	97
Total Interviewed	35	29	64	100

TABLE 8
WHAT TYPE OF FARMER WOULD YOU LIKE TO BE?
N: 50[2]

Farmers	Male	Female	Total	%
Commercial	7	1	8	16
Emergent	19	16	37	70
Subsistence	3	4	7	14
Not answered	4	8	12*	19

* Among these, one woman answered that she must ask her husband; one man answered 'fisherman'.

With respect to extension officers, training officers and Mpika College of Agriculture staff, everyone who is located at the District Headquarters in Mpika and in the

[1] K. Garvey et al., "Preliminary Findings," p. 32.

[2] Ibid., p. 32.

the three camps was interviewed. However, a special effort was made to locate female extension staff and home economic officers. While women farmers were clearly active in agriculture, as we interviewed more and more people we began to realize that only female extension staff could easily reach female farmers.

To provide general policy background, the Provincial Agricultural Officers were also given questionnaires to fill out, which they returned by mail.

The setting for the survey. Mpika District is sub-divided into Agricultural Camps, which are the headquarters for administrative purposes of each agricultural extension worker. The three camps chosen were Mpika Main Camp, which is the area including and surrounding the District Headquarters Mpika; the Chalwe Camp, which is adjacent to the Mpika Main area but with its Agricultural Assistant based approximately twenty kilometers from Mpika itself; and Kopa, chosen for its distance from the urban District Headquarters, Mpika. Kopa lies sixty miles from Mpika, on a road accessible during the rainy season only by 4-wheel drive vehicle. Within the Kopa Camp area, villages under the responsibility of the Senior Agricultural Assistant lie up to 50 miles further away, in areas without roads. These three areas were chosen due to their distance from an urban area.

A. Kopa Agricultural Camp.[1] Twenty-five people (12 males, 13 females) from 9 villages were interviewed. Villages in two areas (20-30 km. distance from Kopa) were visited by Landrover with additional walking, where roads ended, of about one hour.

B. Chalwe Agricultural Camp. Twenty-eight people (17 males, 11 females) from 9 villages immediately surrounding the Camp and the Mpika College of Agriculture were interviewed. All were within 1-3 hour walking distance from Chalwe Camp Headquarters.

C. Mpika Main Agricultural Camp. Nine people (3 males, 6 females) from 3 villages were interviewed in an area immediately surrounding the Camp within a 10 minute to one hour walking distance.

(With the exception of 2 or 3 villages, the Agricultural Assistant responsible for each Camp accompanied us.)

Within each camp-area villages were chosen based on their distance from the camp area. Accordingly, the villages varied in location from close to the Camp Headquarters itself, to distances of 5-10 km. (in the case of Chalwe and Mpika Main) and up to 30 km. (Kopa Camp) away. In the case of Mpika Main and Chalwe Camps; we were totally dependent on walking as a means of transport, hence 10 km.

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[1]See Chapter IV for a more detailed description of the Agricultural Camps and villages within their jurisdiction.

from the headquarters of each Camp was the furthest we could manage. In the case of Kopa, we had the use of a Department of Agriculture Landrover.[1] This enabled us to reach from 8-30 miles (in addition to walking) in the immediate area of the Kopa Camp Headquarters.

Table 9 gives the number of farmers interviewed, male and female, in the villages of the three Agricultural Camps.

Practical implications of research. Each discussion lasted from one to three hours. Most were taken quite seriously by the farmers, and there was some formality in the whole process. Everyone was seated in the shade, usually outside, with the guests on the best wooden seats, collapsible chairs, mats or, in one case, on a sofa inside the house. On numerous occasions, the farmers thanked us for the experience and for providing the chance for them to learn.

Others, however, were critical, and one old man was quite blunt about researchers:

> You people just come and do your research and after you are through, that's that, nothing comes of what you've done. The next time you come you won't bring solutions but just more questions. --Farmer[2]

These comments were borne in mind when the

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[1]The Landrover and driver, an employee of the Department of Agriculture, were made available to us on a cost basis. We paid the overtime of the driver and paid for the petrol and oil for the Landrover.

[2]K. Garvey et al., "Preliminary Findings," p. 15.

TABLE 9
VILLAGES VISITED[1]

	Male	Female	Total
Chalwe Camp			
Chintu	2	2	4
Chitindi	1	1	2
Makasa	1	3	4
Mushamaba	1	1	2
Nfukwe	3	1	4
Nkupisha	3	0	3
Nsefu	4	3	7
Total Chalwe	15	11	26
Mpika Main Camp			
Chisowa	2	1	3
Chitulika	1	0	1
Mutengo	2	4	6
Total Mpika	5	5	10
Kopa Camp			
Kapunfi	1	0	1
Kopa	2	2	4
Masakano	4	4	8
Sande	1	3	4
Chilalika	1	0	1
Chalumwenge	2	2	4
Chalinda	1	1	2
Andele	0	1	1
Nchumbula	1	0	1
	13	13	26

[1]K. Garvey et al., "Preliminary Findings," pp. 6-7.

preliminary results of the research were presented at a Seminar at the University of Zambia's Rural Development Studies Bureau. The basis for the Seminar was a 62-page paper, "Agricultural Education for Subsistence Farmers with Special Reference to Mpika District: Preliminary Findings," which was given out to participants in the Seminar and was also sent to the people in decision-making positions in the Department of Agriculture of the headquarters and in the Northern Province. Other recipients included the Acting Principal of the Zambia College of Agriculture, Mpika, and the two Chiefs within whose jurisdiction we had carried out research. Upon receipt of the paper one Chief remarked that it was the first time in all the years researchers had been coming that anyone had sent back the results of the research.

In one case our conversations in a village one hour's walk from the Zambia College of Agriculture, Mpika, produced concrete results. The College is approximately 20 miles from Mpika itself, and the village was about an hour from the College and the same distance, one hour, from the tarred main road. The Agricultural Assistant had sent word a day in advance that we were coming, and when we arrived the old man was quite irritated that for two days in a row he and the rest of the people in the village were detained from working in their fields. Apparently, the day before they had been summoned for a political meeting and

this was the second day they were being delayed.

> Why are you always delaying our progress? You are going ahead with your progress while delaying ours. We spent all day yesterday at a political meeting and today you want us to stay in the village to answer your questions. - Farmer[1]

Nevertheless, the Headman called on the people to cooperate with us. The Agricultural Assistant who accompanied us introduced us:

> You see Comrade Headman that these friends of ours are from Lusaka. They want to see the way our progress is advancing. This lady with them will chat with the fellow ladies.
>
> Mwishib e tata, mwebene mushi; ukatila aba abanensu, bafumine ku Lusaka. Dalefyaya ukumonaha ifyo ubyantashi bwesu buleya. Uyu namayo apa alelanshana na bana mayo banankwe.[2] (Agricultural Assistant in original Bemba.)

The Headman walked towards the center of the village after critically having observed the four visitors. At 70, he walked majestically with hands locked behind his back.

> You, all the ladies remaining in the village, assemble and meet a fellow lady who is white, very white.[3] All the ladies you come here now come and have a chance to meet this lady who is white, extremely white.
>
> Bana mayo mwebashele muno mushi, iseni kuno mulongane. Bana mayo eee . . . Iseni mulongane, mulanshanye na namayo numenu, uwabuta uwabuta tutu. Bana mayo bonse iseni kuno. Mwise mumonane umwanakashi munenu, uwabuta sana uwabuta tutu. Iseni munfye ifyo alemweba. (Headman in original Bemba.)

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[1] K. Garvey et al., "Preliminary Findings," p. 15.

[2] Note: The Bemba is included here for those readers who understand it as it has nuances which are lost in the translation.

[3] The implication of the references to white is the

From this and other conversations we wrote a list of the requests by this village and others and presented it to the Principal, Vice Principal and some staff members of the College of Agriculture, Mpika. As a result, one of the staff members developed a set of proposals for the College decision-makers to consider. The proposal for "Extension Practicals in Traditional Villages Surrounding the College" is attached as Appendix II. We were led to believe that a number of proposals were likely to be adopted. For illustrative purposes, the following includes the requests of the farmers as presented to the College.

Farmers comments and requests. In general, people from Makassa Village are bitter because the College took their best land. The land they are now using is not fertile. They complained that the college is not even using the swampy dambo beyond the village's maize field. They indicated that they would like to use the dambo, and those that were not paid when evicted from their land wanted payment.

Another problem is that no one from the village benefits from a job at the college. They agreed that it would generally benefit the village if someone had a job, although occasionally season labor is hired from the village by the college.

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the contrast of a person like paper or the dust from the greyish soil.

Another general problem not attributed to the college is their source for drinking water. They have had to change from a flowing stream (reason not known) to drawing water from wells alongside another river. This water is stagnant and they attribute their stomach problems to this bad water.

The following suggestions were made by the farmers who were asked what they would like from the college:

a. could the college help them to drag iron bars left near the main road to bridge two streams so that vehicles could have access to their village.

b. failing this, could the college provide vehicles to help drag trees which they would cut to be used for bridges.

c. it would be very helpful if the college would sell citrus tree seedlings and chicken feed. They would like to raise chickens and buy relish such as eggs and meat.

d. it would be a great help if they could hire tractors from the college for breaking new land, thereafter they would like to hire oxen for ploughing the land already broken by the tractors.

e. when asked if they would like advice or assistance from students they said "yes they would receive students."

They are very grateful to the college for the use of the health clinic.

Similarly other area farmers in Chintu Block, Nesefu, and Mwateshi appreciate the clinic very much. In Mwateshi, unlike Makassa, quite a number of farmers seem to benefit from jobs from the college. Those who had seen students either seem to appreciate their help or informed us that they were teaching the students.

In general, all farmers in these villages seemed to have troubles due mainly to transport in getting inputs such as seeds, fertilizers, insecticides, since they are not available from the local depot--only from Mpika.

The Headman at Nsefu indicated that he would be very happy to have students come to advise his village on better practices. In Mwateshi none of the people seemed to have had any advice and they appeared to be very receptive to the idea of advice.

C H A P T E R I I I

AGRICULTURAL EDUCATION AND MAIZE

A SELECTED REVIEW

The literature review has been developed to take into account three questions.

1. What studies have already been done which identify factors influencing agricultural education in Zambia;

2. what other studies, not specifically directed at Zambia, are relevant to agricultural education of the small farmer in Zambia; and

3. what studies of diffusion of innovations and modernization formed a basis for the instrument development phase of this research and analysis.

The review of literature is grouped under four headings, three of which coincide with those which form a basis for presentation of the results of this dissertation in Chapters V, VI, and VII: (i) Educational methods and content; (ii) Logistical and organizational issues; (iii) Government Policy and financial issues as they relate to nonformal agricultural education. The fourth heading covers theories of modernization and diffusion of innovations.

Educational Methods and Content

For the purposes of this dissertation, educational methods and content are confined to discussion of:

a. educational methods, specifically nonformal methods used in agricultural education in Zambia; and

b. educational content, specifically content used in the national extension system in Zambia and related programs.

To summarize, a number of the more significant issues of educational methods and content which emerge from the review of literature in this section are as follows:

A widespread characteristic of extension and farmer training programs methodology is an authoritarian attitude toward farmers as simple or ignorant people to be treated as children. Agricultural extension and Farm Institute and Farmer Training programs must be adapted to meet the needs of both men and women farmers. Farm Institute and Farmer Training Center programs in Zambia are characterized as weak because of extensive use of the lecture method. Demonstrations at Farm Institute and Farmer Training Centers are characterized as weak and virtually useless, primarily because the farmers do not get effectively involved in demonstrations, which are institutionally managed and therefore less convincing. Neither extension personnel nor Farm Institute or Farmer Training Center personnel follow

up the courses with the participants to ensure application of what they learned. Very few educational aids, such as media, flip charts or hand-outs, are available.

The content of agricultural education programs is too often used as a means for informing farmers about new cash crops and associated technical practices. Persuading or berating farmers to adopt them is usually part of the process. Success is then measured in terms of increased production of that particular crop. Often there is no distinction between types of farmers, and the level of the content of education is virtually always for beginners. Technical training is often provided for farmers who have limited resources, e.g., labor, equipment, seeds and fertilizers. Too often the education is part of a Government Policy package and is irrelevant to the farmers.

Coombs and Ahmed provide a useful basis for categorization of nonformal[1] agricultural education on the basis not only of methods and principles of education, but also of the approaches which are based on a variety of theories of rural development. The following are four categories of nonformal agricultural education.

Briefly, according to the authors, first the

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[1]Philip H. Coombs and Manzoor Ahmed, Attacking Rural Poverty: How Non-Formal Education Can Help, (Baltimore: The Johns Hopkins University Press, 1974), pp. 24-136.

extension approach[1] is used as the means to transform static subsistence farming into dynamic market oriented agriculture and the second, the vocational training apporach is often associated with residential farmer training (in the case of Zambia, at Farm Institutes and Farmer Training Centers). Both the term extension approach and vocational training approach, as the authors define them, involve a combination of theoretical and practical methods of learning. Both of these methods involve the top down approach. While they may not be consciously seen as the ideal method to be used to achieve rural development, they are often presented as such and, in fact, are often the only methods used for agricultural education.

The third, the cooperative self-help approach is based on the assumption that rural transformation must be begun by the people who are to be transformed. The basic aim of this approach is cooperative self-help and governance through the establishment of local institutions. One practical aspect is noted, that local projects, while self-help in nature, sometimes cannot be implemented without outside technical and financial assistance which will

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[1]Uma Lele distinguishes between two approaches to extension, the "take it or leave it approach" and the "contract farming method" which involves being licensed as long as the innovative crops are grown properly. See Uma Lele, The Design of Rural Development, Lessons from Africa, (Baltimore: The Johns Hopkins University Press, 1975, for the World Bank), pp. 64-65.

help to break through the barriers to rural development.

The fourth, the integrated development approach is characterized by a management system which may be either very authoritarian or may be developed to provide at some stage for local planning, decision making and implementation. The principal aim of this approach is to ensure the equitable distribution and coordination of all factors needed for agricultural and rural development.

While the Ahmed and Coombs study is not specifically directed at Zambia, it does provide examples which include Zambia and it provides a broad framework for discussion and critique of agricultural education. Agricultural education methods and content are discussed from the point of view of the quality of content and the variety of educational methods, media and materials used in non-formal education and specifically in agricultural education. A number of the factors identified in the Ahmed and Coombs study as influencing agricultural education were used in the development of the interview schedules for this[1] present study. These include the factors believed to influence effectiveness of Farmer Training Centers, Farm Institutes and extension services, such as: the neglect of women farmers; identification of farmers' knowledge needs; liaison between

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[1] This study refers hereafter to this dissertation: "Agricultural Education of Traditional Farmers in Zambia with Special Reference to the Mpika District."

persons engaged in research, extension and farmers; emphasis in agricultural education on cash crops versus subsistence or traditional crops.

Extensive use of the lecture method and an authoritarian approach to teaching are cited as weakness by Honeybone and Marter in their study of Farm Institutes and Farmer Training Centers.[1] Lack of discussion and use of crop demonstrations which are not realistic are cited as examples of other weaknesses, along with weak departmental policy for training institutions; the lack of use of Farmer Institutes and Training Centers; lack of staff; and lack of a relationship of training programs to the actual problems in the community. The study concentrates on administrative and organizational issues rather than substance and methods of agricultural education or policy or financial issues. The authors' comments were very useful as indicators of areas to be explored in this study. The authors' concentration is on small-scale, family subsistence farmers in rural Zambia, but it differs from this dissertation in that the farmers are divided into four groups and among these are farmers who would be classified as emergent farmers in this study. The definitions of

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[1]David Honeybone and Allen Marter, An Evaluation Study of Zambia's Farm Institutes and Farmer Training Centers, (Lusaka: University of Zambia, Rural Development Studies Bureau, Study carried out as part of the Zambia World Bank Education Project, 900-ZA, 1975).

farmers include a number of highly subjective criteria, for example, farmers in group three are characterized as those whose activities are carried out as response to the initiative of someone else, and farmers in group four are defined as those whose activities are characterized by enterprise, experimentation and risk.

Marter and Honeybone's findings, conclusions and the raw research data available at the Rural Development Studies Bureau were utilized to the fullest extent possible at all stages of this study. Some of the most useful findings are the following three: The first, though poorly documented, is that actual contact time of extension staff with farmers is approximately two hours per day; the second is that technical training does not improve the activities and income of farmers who have limited resources, including labor, equipment, seeds and fertilizers. The third is that the training provided at Farm Institutes and Farmer Training Centers is weak because of extensive use of the lecture method.

Education methods and content are briefly referred to in another Marter and Honeybone study[1] which concentrates on the resources, activities and incomes of the rural small-scale farm households, particularly the

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[1]Alan Marter and David Honeybone, The Economic Resources of Rural Households and the Distribution of Agricultural Development, (Lusaka: Rural Development Studies Bureau, University of Zambia, December, 1976).

employment and income opportunities of their members. The impact of these resources on a range of agricultural and non-agricultural activities available to the rural small-scale farmer is a component of the study. While the discussion of agricultural education is limited mainly to mention of extension, the study acknowledges an implicit policy that agricultural extension coverage is aimed mainly at wealthier farmers. The recommendations include: the efficiency of the extension service should be changed by organizational reform and improvement in the quality of extension workers; more effective contact with the majority of subsistence farmers should be undertaken; and the usefulness of the hybrid maize package as a focal point for extension should be questioned.

A study currently underway (1980)[1] under the aegis of the University of Zambia's Rural Development Studies Bureau, is investigating the problems of subsistence farmers in remote rural areas. Its focus differs from that of this dissertation in that its emphasis is on resources of the subsistence farmer and not on education. The proposal cited in the footnote below and the comprehensive questionnaire developed to implement it, provided a useful reference in the development stages for the questionnaire

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[1] Proposal "Study to Investigate the Problems of Subsistence Farmers in Remote Rural Areas." (Lusaka: University of Zambia, Rural Development Studies Bureau, 1979), study currently underway, 1980. (Mimeographed.)

schedules for this study.

Various ways in which agricultural efficiency is related to farmers' attitudes toward agricultural education are highlighted in a study by Kasapu on economic efficiency in maize production of small-scale commercial farmers.[1]

One recommendation of the Kasapu study is that research be undertaken to find ways of changing the attitude of the types of farmers surveyed. It was found that the small-scale commercial farmers were not responsive to technically and economically advanced systems of agricultural production. He alleges that this is also a problem commonly associated with traditional farmers, though there is no data submitted to verify this. Kasapu's study differs from this study in emphasis on economic efficiency rather than on agricultural education and focus on small-scale commercial farmers rather than subsistence farmers.

A study carried out in 1973 by Dean F. Tuthill[2] examined the delivery of services, including agricultural education, to three categories of village farmers in the

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[1]Timothy M. Kasapu, "Economic Efficiency in Maize Production of the Outlying and Proximate Small Scale Farmers: A Comparative Study of two Districts of Zambia, Petauke in the Eastern Province and Monze in the Southern Province." M.S. Thesis, (Makerere: Makerere University, Kampala 1974). Unpublished. (Typewritten.)

[2]Dean F. Tuthill, "Services to Village Cultivators in the South Ngoni Area of the Chipata District," (Lusaka: University of Zambia, Rural Development Studies Bureau, June 1973). (Mimeographed.)

South Ngoni area of the Chipata District in the Eastern Province of Zambia. The Tuthill study differs from this dissertation in a number of ways. Traditional farmers were termed cultivators in the Tuthill study and included a total of 117, of whom three were female. The cultivators were divided into income groups of 38 each: one group with sales in 1972 of K.40.00 or more; one of cultivators with sales in 1972 of K.3.00 to K.40.00; and a low income group with sales of under K.3.00 in 1972. The division into income groups was to enable the author to test the hypothesis that higher income cultivators received more services than did the "subsistence cultivators." In Tuthill's study, very detailed questions were put to each farmer about planting practices[1] for hybrid and local maize, along with the use of specific practices for groundnuts and cattle. In this dissertation the emphasis is on methods and content of education and there is no attempt to correlate the adoption by farmers of specific agricultural practices with the amount of contact. However, this dissertation attempts to determine whether there is a relation between the amount of extension contact with farmers and whether or not they grow hybrid maize.

The Tuthill study did not include questions about Farm Institutes or Farmer Training Centers or their pro-

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[1] "Practices" refers to the agricultural methods used by farmers when they adopt a crop such as hybrid maize.

grams. This dissertation distinguishes between Farm Institutes or Farmer Training Centers; Farm; Home; Agricultural Camp and Village as locations for agricultural education. Tuthill's study categorized the location or site for agricultural education as follows: own village, another village, a demonstration plot or agricultural camp. The content of education and the purpose of the extension visits is limited to six categories in the Tuthill study, as opposed to five categories in this dissertation.

Tuthill's six categories included in rank order from high to low percentage: fertilizer applications and planting methods for maize; observation of crops, mainly maize (to my knowledge, this was not mentioned by farmers in this study); encouraging the planting of hybrid maize; ploughing, encouraging the dipping and vaccinations of cattle (there were virtually no cattle kept by the traditional farmers interviewed for this study); vegetable growing methods. Tuthill ranks group meetings between extension personnel and farmers as follows by percentages from high to low, as encouragement to grow more, use more fertilizer and work hard; planting, fertilizing, cultivating methods; demonstration of growing crops; general farming and information on loans.

In a study carried out by D.I. Chilimboyi[1] during the University of Zambia academic school year 1971/1972, groups of farmers who had attended Kanchomba Farm Institute courses and Monze Farmer Training Center courses were visited in August 1971 and again in January 1972 in an attempt to determine if they were applying what they had learned at the Kanchomba Farm Institute or Monze Farmer Training Center. In addition, the author studied the teaching methods used and relevance to the farmer of the content of the courses which these farmers attended. Chilimboyi's study went far beyond this dissertation in attempting to assess the effectiveness of the education on the farmers' actual practices on the farm, over time. The findings of the Chilimboyi study, particularly with respect to educational methods, correspond to the findings of the Honeybone and Marter Study of Farm Institutes and Farmer Training Centers of December 1975, cited earlier.

Logistical and Organizational Factors

Logistical and organizational factors relating to agricultural education services are cited in virtually every study of Zambia which has an agricultural education component. These include: the number of vehicles

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[1]D.I. Chilimboyi, "An Evaluation of the Institutionalized Farmer Training Centers in Southern Province," (Lusaka: University of Zambia, Department of Extra Mural Studies, 1971/72), unpublished. (Typewritten.)

available for transporting farmers to educational programs; the number of vehicles available for extension staff; the distance covered by extension staff to reach the farmers; the ratio of farmers to extension staff and Farm Institute or Farmer Training Center staff; the number of administrative levels in the extension service; availability of inputs such as seeds, fertilizers, insecticides; prices; labor; credit availability, and markets; the problem of who identifies, and by what criteria, farmers to attend Farm Institute and Farmer Training Center courses. Another factor is the apparent extensive repetition of courses for virtually the same farmers. Along with that, is the difficulty of making courses on agriculture available to women.

G. Godel, in his 1972 study, An Analysis of Zambia's Agricultural Camps,[1] provides a great deal of basic information, as well as general statistics, on logistical and organizational factors affecting agricultural education nationwide through extension programs at the camp level. Godel's study does not make any distinction with respect to types of farmers, unlike this study which focuses on subsistence farmers, nor does his study provide data on interviews with farmers. It does provide very useful and

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[1]Republic of Zambia, Department of Agriculture, Ministry of Rural Development. An Analysis of Zambia's Agricultural Camps at July 15, 1972. By Geo. L. Godel, M.Sc., F.A.I.C., (Lusaka: Ministry of Rural Development, Agricultural Extension Specialist Planning Unit). (Mimeographed.)

interesting data on camp staff's opinions of the problems hindering increased agricultural production. They range from lack of credit (cited as the foremost problem by staff in all provinces) to lack of training staff (the least of all problems cited for each province). This study seeks to supplement and complement Godel's study by comparing farmers' opinions with camp staff opinions through similar questionnaires directed at both groups.

Belay, in his comparative analysis of agricultural extension systems of eight east African countries[1] provides information and suggestions on the organization and administration of agricultural extension services in the eight countries compared, which include Zambia. The study proposes a number of indicators which are used to provide information as to whether an extension service is well organized and what the merits of its organization are. The indicators include: the ratio of farm families to extension workers; amount of cultivated area per extension worker; number of extension workers per vehicle; ratio of farm families to Farmer Training Centers; number of cattle per veterinarian; number of research officers per research station; ratio of extension workers to research workers; number of all weather roads per 1,000 inhabitants and per

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[1] M. Belay, A Comparative Analysis of Agricultural Extension Systems of Eight East African Countries - with suggested guidelines for improvement, (Addis Ababa: ECA/FAO Joint Agricultural Division, (E/CN.14/AGRIP/10), 1970).

1,000 square kilometers. However, the study appears to be documented from secondary sources and, while of general interest, it is thus difficult, for example, to pinpoint the indicators and the circumstances in which they are valid with respect to agricultural education in Zambia.

The factors indicating effectiveness of individual extension workers is analyzed by Alao, in a study[1] of characteristics and success in agricultural extension work.

This study examines the factors which may influence the outcome of the work of extension agents. Its findings confirm that program success is contingent upon a good relationship between the agent and the clientele. The factors most likely to indicate success were found to be use of multiple extension methods, knowledge of village leaders, number of days worked in the village per month, knowledge of important village groups, distance of extension personnel's birthplace from the village and educational level of the extension personnel vis-a-vis the farmer. Alao's study does not clearly identify the types of farmers surveyed. It does not include all types of agricultural education, and it concentrates on Nigeria, not Zambia.

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[1] J. Ade Alao, "Agent Characteristics and Success in Agricultural Extension Work." (Typewritten.) No date. Data used for this analysis was collected in Eastern Nigeria in 1966/67 by E.M. Rogers and a team from Michigan State University under an AID sponsored research project "Diffusion of Innovations in Rural Societies."

Godel's analysis of Zambia's Farm Institutes (F.I.) and Farmer Training Centers (F.T.C.)[1] provides excellent coverage of the logistical and organizational factors affecting Farm Institutes and Farmer Training Centers. The following are covered: the attendance records at F.I.s and F.T.C.s; the number of courses given; delineation and evaluation of course by topic; numbers and quality of teaching staff at F.I.s and F.T.C.s; the facilities at F.I.s and F.T.C.s and the livestock and poultry available for demonstrations at F.I.s and F.T.C.s. The findings of Godel's study illustrate a number of factors which affected the efficiency of the Farm Institutes and Farmer Training Centers: e.g., the occupancy rate of 48.3 percent for residential programs for the period of the study, 1969-71; the unrealistic planning procedure which showed a continual gap between the planned intake and the actual intake, the differences between the performance of the F.I.s, F.T.C.s and camps in the big three provinces and those in the agriculturally poorer provinces; the failure to review and modify procedures for choice and the level of farmers for courses; the failure to upgrade teaching staff; the failure of the advisory committees to be active; the failure to make

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[1] Republic of Zambia, Department of Agriculture, Ministry of Rural Development, An Analysis of Zambia's Farm Institutes and Farmer Training Centers 1969-1972. By Geo. L. Godel, Msc-F.A.I.C., (Lusaka: Ministry of Rural Development, Agricultural Extension Specialist Planning Unit). (Mimeographed.)

semiannual evaluations of F.I.s and F.T.C.s performance as well as the lack of year-end evaluation by independent evaluators; inadequacy of staff housing involving accommodation, for both female and male students; failure to rectify transport and basic problems such as water supply, etc.

Ekpere's comparative study[1] focuses on the job performance of extension workers in two different extension organizations in Nigeria. One group of extension officers focused on rubber only, and the other group were involved with general agricultural extension. One of his findings has implications for job performance appraisal and organizational effectiveness useful to analysis in this study: the use of appropriate technology was a "major determinant" in the differences in level of performance between the two types of extension staff. Levels of performance differed significantly on seven out of eight indicators of extension staff-job performance. The indicators included: the number of demonstrations organized; the number of farmers meetings attended; the number of farmers associations organized; the number of local leaders identified and trained; the number of farmers visiting the extension office; the number of production campaigns implemented; and the number

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[1]Johnson A. Ekpere, A Comparative Study of Job Performance Under Two Approaches to Agricultural Extension Organization, Number Sixty-one, (Madison: University of Wisconsin, Land Tenure Center, August 1974).

of joint programs organized. Other factors identified as leading to significant differences in the level of performance of the two types of extension workers were: type and nature of inservice training of each extension worker; the amount of time actually spent in field extension work; the extension worker perception of his or her job; extent of participation in programming and decision making processes by extension staff; extension worker perception of supervisory style and procedures for getting work done; budget limitations and indirect effect of institutional factors--land, labor, credit and marketing arrangements. Additional factors which were reported as affecting levels of performance included the shortage of staff in absolute numbers and quality; and the absence of open channels of communication for inter-agency cooperation for rural development at local level.

Government Policy and Finance

Government policy and finance as they relate to agricultural education are discussed here as one of the factors which affect agricultural education of the traditional farmer. Ultimately, the success or failure of agricultural education can be traced back to factors such as the availability of finance to enable all types of agricultural education to take place and to the policy which established the guidelines and orientation of the agricultural

education.

In Zambia the Transitional Development Plan bridged the gap at independence between the old colonial government plan and the new government's First National Development Plan. Key issues, such as the lack of extension staff or types of farmers to be reached, were not mentioned. However, the basic policy intentions and guidelines which are still in practice were articulated: self-sufficiency in main local consumption items; production of crops for export; including cash crops like tea and coffee; and maintenance of farm institutes; demonstration and experimental pilot projects.[1]

During the period of the First National Development Plan (FNDP)[2] 1966-1970, it was noted that the coverage of extension was "pitifully meagre" and that there was an average of one extension worker to 750 farm families. The policy was to build up the extension service through training as quickly as possible. Thereafter the first goal was to extend the network of Farmer Training Centers to all provinces and secondly to introduce a new extension method

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[1]Republic of Zambia, The Central Planning Office, Office of the President, An Outline of the Transitional Development Plan, (Lusaka: The Government Printer, 1965), p. 40.

[2]Republic of Zambia, Office of National Development Planning, First National Development Plan 1966-1970, (Lusaka: Office of National Development Planning, July 1966).

through broadcasting programs which village people would listen to a small listening centers.

During the Second National Development Plan (SNDP)[1] covering the period 1971-1976, inadequate staff continued to plague the extension service. The objective of the extension service continued to be to provide technical and management advice to all producers. Permanent self-sufficiency in maize was a primary goal.

The Third National Development Plan (TNDP)[2] covering the period 1979-1983 puts emphasis on emergent farmers although extension services will continue to be provided to both commercial and traditional farmers. The ideal ratio of farm families to extension workers is projected for 1983 at one extension officer to 400 farm families.

Finance and Policy goals common to all of the development plans to date, include the goal of self-sufficiency in domestic food and surplus marketed production for export. Hybrid maize is the theme and thrust of all the extension efforts, and emergent farmers are the target group to be reached. Lack of finance of budgeted

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[1]Republic of Zambia, Ministry of Development Planning and National Guidance, Second National Development Plan January 1972 - December 1976, (Lusaka: Ministry of Development Planning and National Guidance, December 1971).

[2]Republic of Zambia, Office of the President, National Commission for Development Planning, Third National Development Plan 1979-1983, (Lusaka: Government Printer, October 1979).

programs is cited as the reason for curtailment of planned Farm Institute and Farmer Training Center programs.[1] Targets of staff levels in the Department of Agriculture have not been met during the period of any completed Development Plan thus far. The Marter and Honeybone study published in 1976 states that the recurrent annual expenditure of the Department of Agriculture was below the 1971 level in absolute terms and, in real terms, is probably close to the level of recurrent expenditure at Independence.[2] One of the indicators of effectiveness of extension services in the Belay study[3] was cited as the annual cost per extension worker in comparison with the annual cost per research worker.

The UNZALPI Study No. 3[4] investigated what determines high and low labor productivity in Zambia. Agricul-

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[1]Republic of Zambia, Ministry of Rural Development, Department of Agriculture, Annual Report of the Extension Branch 1974-1975, (Lusaka: Government Printing Office).

[2]A. Marter and D. Honeybone, The Economic Resources of Rural Households and the Distribution of Agricultural Development, (Lusaka: University of Zambia, Rural Development Studies Bureau, 1976).

[3]M. Belay, A Comparative Analysis of Agricultural Extension Systems of Eight East African Countries - with suggested guidelines for improvement, (Addis Ababa: ECA/FAO Joint Agricultural Division, (E/CN.14/AGRIP/10), 1970).

[4]C.M. Elliot, J.E. Bessell, R.A.J. Roberts, N. Vanzetti, Some Determinants of Agricultural Labour Productivity in Zambia, (Universities of Nottingham and Zambia. Agricultural Labour Productivity Investigation (UNZALPI), Report No. 3, November 1970).

ture was one aspect studied. The organizational approach of this study was based on the premise that many factors, including Government decisions and inputs, affect agriculture. The study examined three levels of decision making: decisions by farmers as they affect production, i.e., cultural, financial, environmental; decisions of Government employees at the level of district administration as they affect production; and decisions taken by central Government as to education, health facilities and prices paid to farmers. Its definitions of farmers differ radically from this study in that it classifies farmers according to differences in motivation and a distinction is made by the interviewer between villagers who have an interest in a cash income and those with no interest in a cash income.

Diffusion of Innovations and Modernization

Within the context of agricultural education, numerous studies can be found in the literature that outline models which can be applied to any developing country to indicate modernization and diffusion of innovations. Generally, the studies isolate one or more factors and then attempt to show, through various methodologies, the relationship of these to diffusion of innovations and modernization in agriculture.

A number of factors in the studies examined were incorporated in the instrument development phase of this

study. Due to the exploratory nature of this study, and since no single model was found to be useful in its entirety, factors from a variety of studies were used.

The following are brief descriptions of the concepts of modernization and diffusion of innovations, followed by a discussion of various studies relevant to this study.

The relationship of non-formal education to agricultural innovation or modernization is positively linked on the basis of statistically oriented work by two authors, Benor and Harrison, and Lockheed, Jamison and Lau (see pp. 96 and 97 below). However, most authors mentioned below implicitly or explicitly assume that education has some affect on output. Other studies cited below introduce a variety of factors which indicate or contribute, often along with education, to improved or increased agriculture, including adoption of hybrid maize, which is often associated with modernization. Factors which were highlighted by the authors and included to a great extent in the questionnaires were: personal characteristics, such as education background; age; attitudes toward learning; attitudes toward adoption of maize, belief in agricultural or other magic and witchcraft; self image; aspirations; annual income; numbers and kinds of implements.

Modernization. The following definition is taken directly from E. Rogers. "Modernization is the process by which individuals change from a traditional way of life to a more complex, technologically advanced, and rapidly changing style of life. The root of the word modernization is from the Latin modo, meaning 'just now'." Rogers likens modernization to development with the distinction that modernization refers to individuals and development refers to society. It is important to note that Rogers feels that ". . . modernization itself is a synthesis of old and new ways, and differs in various settings." He agrees, though, that the source for much of what he calls modernization is Europe and Western nations, but he asserts that modernization is not the same as Europeanization or Westernization and, further, he does not ". . . imply that modernization is all 'good'."[1]

Diffusion of innovations. Diffusion is the process through

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[1]All quotations in this paragraph on modernization are from: Everett M. Rogers and Rabel J. Burdge, Social Change in Rural Societies, (New York: Appleton-Century-Crofts, Meredith Corporation, 1972), p. 404.

For further discussion of innovation, modernization and methods for diffusion see also Everett M. Rogers in association with Lynne Svenning, Modernization Among Peasants: The Impact of Communication, (New York: Holt, Rinehart and Winston, Inc., 1969).

Frederick M. Harbison, Joan Maruhnie and Jane Resnick, Quantitative Analyses of Modernization and Development, (Princeton: Industrial Relations Section, Department of Economics, Princeton University, 1970).

which members of society receive new ideas. Education is clearly a prominent vehicle for the diffusion of innovations, particularly in the field of agriculture. The crucial elements in the process are defined as "(1) the innovation (2) which is communicated through certain channels (3) over time (4) among the members of a social system."[1] Some innovations take years and years to be adopted and others may become popular in a short time.

The following characteristics are thought to contribute to the adoption of the innovation."1. relative advantage, 2. compatability, 3. complexity, 4. reliability, and 5. observability."[2] Communication of the innovation may be carried out through a variety of methods, including mass media, written materials or interpersonal exchanges between or among two or more people.

Other definitions include innovation as an invention, new discovery, or new method, machine or system of organization, or

> Innovation also includes adaptation of known technologies to concrete problems, and the securing of recognition and acceptance of new ideas and new concepts.[3]

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[1]Everett M. Rogers and Rabel J. Burdge, Social Change in Rural Societies, (New York: Appleton-Century-Crofts, Meredith Corporation, 1972), pp. 349-52.

[2]Ibid., p. 353.

[3]Frederick Harbison, "The Prime Movers of Innovations" in C. Arnold Anderson and Mary Jean Bowan, editors, Education and Economic Development, (Chicago: Aldine Publishing Company, 1965), p. 229.

Depending on the time it takes for an individual to adopt an innovation, he or she may be classified in one of the following adopter categories. These categories range from Innovators, who are the first people in a social system to adopt new ideas, to laggards, who are the last people to adopt new ideas. The five types of adopters include: (1) innovators; (2) early adopters; (3) early majority; (4) late majority; and (5) laggards. Each category is further identified with various characteristics or behaviors which include: time of adoption; attitudes and values; abilities; group memberships; social status; farm businesses; and sources of information.[1] This categorization of farmers was considered to be too subjective for application in the Zambia setting, due to the complexity of the cultural situation.

A number of the studies cited below attempt to link education to improved or increased agriculture either (a) through comparative studies which use statistical methods or (b) through theoretical discussion. Other studies identify factors which have been determined to affect modernization or diffusion.

One recent study, financed by the World Bank, hypothesized that exposure to extension or other non-formal agricultural education had a positive effect on output.

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[1]E. Rogers and R. Burdge, Social Change in Rural Societies, pp. 357-58.

Sixteen out of the eighteen studies analyzed had data on non-formal education. Of these sixteen, eight provided evidence that extension was significantly related to productivity, one showed that extension was negatively related to productivity, and seven showed no significant affect on productivity. The authors "explicitly stress . . . that this survey . . . is not intended to cover studies of the effectiveness of agricultural extension . . . " They go on to say that Benor and Harrison report experiences with extension services which are termed more effective.[1]

Benor and Harrison argue in their study that intensive extension is a "very powerful communication tool which has an impact on the quality and amounts of yields." They state that, while a detailed rigorous evaluation is beyond the scope of their book, preliminary estimates of the impact of extension services which have been conducted using standard statistical procedures suggest that extension has a "catalytic effect on boosting yields."[2]

Hybrid maize is the object of most of Zambia's agricultural education efforts. In a study done by Ryan and Gross in 1943, it was reported that it took over 14 years

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[1]Marlaine E. Lockheed, Dean T. Jameson, Lawrence J. Lau, "Farmer Education and Farm Efficiency: A Survey," (Washington, D.C.: The World Bank, April 1979), unpublished. (Mimeographed.) p. 21.

[2]Daniel Benor and James Q. Harrison, Agricultural Extension: The Training and Visit System, (Washington, D.C.: The World Bank, May 1977), p. 45.

for hybrid seed corn to reach complete adoption in the state of Iowa, U.S.A. The sample of 259 was analysed in the rural sociological tradition. Among the respondents who were rejected were 12 farmers who had less than 20 acres. While the details of the study would be difficult to compare closely with this study, the following findings from the Ryan and Gross study are interesting to note:

> 1. The first use of hybrid seed followed a bell-shaped (but not exactly normal) distribution when plotted over time (Ryan and Gross, 1943). Gross (1942) classified four adopted categories on the basis of their first use of hybrid seed. The social characteristics, such as age, social status, and cosmopoliteness, of both the earliest and the latest adopters were then determined.
>
> 2. Three stages in the adoption process were recognized by the researchers: (1) awareness, or first hearing about the new idea, (2) trial, or first use, and (3) adoption, or 100 percent use.
>
> 3. The adoption period from awareness to complete adoption averaged about nine years for all respondents. The period from awareness to trial took an average of 5.5 years, and a further 3.5 years was required for the span from trial to 100 percent use.
>
> 4. The typical farmer first heard of hybrid seed from a salesman, but neighbors were the most influential source in leading to adoption. Salesmen were more important information sources for earlier adopters, and neighbors were more important for the later adopters.[1]

One study by Rogers identified factors which characterized agricultural innovations in Ohio. The sample included 104 commercial farmers who farmed more than 20

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[1] Everett M. Rogers, Diffusion of Innovations, (New York: The Free Press of Glencoe, 1962), pp. 2, 32-35.

acres and worked off the farm for pay fewer than 100 days in 1956. The study divided farmers into adopter categories on the basis of an "Adoption of Farm Practices Scale" which included innovators, early adopter, early majority, late majority and laggards.[1]

The study identified a number of factors which were used to measure innovativeness in the Ohio farmers. A number of these factors are used in the instrument development phase of this study. These included Personal Characteristics; Education; Age; Reading Level; Nature of Contact with External Agents; Use of Farmer Magazines. The adoption period or length of time it took for farmers to adopt would be a useful question to ask in another study. Attitudes toward borrowing money or adopting new ideas were discussed, along with belief in agricultural magic; self image, self rating, and farmers aspirations.[2]

Harbison, in a discussion of the prime movers of

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[1]As mentioned earlier, these categories are irrelevant to this study for a number of reasons, including the different focus of the two studies, the difference in the sample of farmers, and the difference in the state of the agricultural industry in Zambia and Ohio. In addition to cultural issues which affect Maize growing in Zambia, i.e., that farmers prefer the taste and handiness for storage of traditional maize, a very significant issue is the accessibility and availability of inputs such as seeds, fertilizer, insecticides and pesticides; it is likely that they are more readily and consistently available in a country such as the U.S.A. than they are in Zambia.

[2]Everett M. Rogers, Characteristics of Agricultural Innovations and Other Adopter Categories. (Wooster, Ohio: Ohio Agricultural Experiment Station, May 1961).

innovation, which is broadly oriented toward development planning, distinguishes among "change designers," "change pushers" and a combination of the two. While he attributes acceleration of innovation to people,[1] formal education is cited as being the most influential factor in producing innovators and thus modernization.

Clifton Wharton, while also focusing on formal education discusses more directly than Harbison the relationship of education to agricultural growth. The factors identified as having a bearing on whether persons had accepted or benefitted from agricultural education, though not focused specifically on commercial or traditional farmers, were useful in the instrument development phase of this study.

These factors include the availability of education which affects the agricultural process: education of farmers; education of those who serve farmers directly (e.g., extension agents, district agricultural officers, community development experts); education of those serving farmers indirectly (such as business, manufacturers); and education of those who are leading the farmers or who are making policies which affect the farmers.

Wharton asserts that, as people are the "central catalyst in the process of agricultural production," a

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[1]Frederick Harbison, "The Prime Movers of Innovation," pp. 229-39.

number of factors influence the economic behavior of people and are "central starting points in any discussion of agricultural growth."[1] These include: attitudes toward weather, work, thrift, and profits. He argues that basic education and literacy are very important for farmers. He further speculates on the kind of knowledge farmers need and how much of it they need:

1. Knowledge is required about new inputs which are available (new seeds; varieties; breeds of animals or poultry; feeds; fertilizers, pesticides; sprays; farm implements and mobile and immobile equipment).
2. Knowledge is needed about new techniques of production: time and techniques of planting (e.g., depth, elevation, watering [if irrigated drainage and spacing]); rotation; weeding, spraying, fertilizing, plus timing, harvesting, culling, weaning, feeding and fattening, innoculations, general medicine, dipping and spraying, vaccinating, pills, crops rotation, cover forage, and soil conservation.
3. Knowledge is needed about how to economize in production and marketing. Education in this area is much more difficult and deficient, according to Wharton.

He believes that the skills and competencies for

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[1] C.R. Wharton, Jr., "Education and Agricultural Growth: The Role of Education in Early-stage Agriculture." In Education and Economic Development, edited by C.A. Anderson and M.J. Bowman (Chicago: Aldine Publishing Company, 1965), p. 205.

each farmer's economic efficiency are tied closely to the experiential and educational background of the individual farmer. It is the wise, economically efficient use of inputs and new techniques which "leads to sustained growth and toward a modern, prosperous and progressive agriculture."[1]

While Wharton places the burden of agricultural growth or modernization directly on education,

> Agricultural growth is the result of individual changes on millions and millions of farms. Farming is an economic activity which involves knowledge on the part of the farmer, skill in applying his knowledge, the physical ability to execute this knowledge, and the will to apply the knowledge and carry on the activity. Growth occurs as the result of changes in each of these areas, changes which come largely through education or a 'perceived experience which leads to a change in future behavior patterns'. Thus, the fundamental problem of agricultural growth is an educational problem.[2]

Mosher sees education as only one aspect of modernization. His well-known essentials, which he considers to be the highest priority for agricultural development, include: markets for farm products, new technology, the local availability of farm supplies and equipment, incentives to farm operations and transportation facilities.[3]

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[1] C.R. Wharton, Jr., "Education and Agricultural Growth: The Role of Education in Early-stage Agriculture," p. 215.

[2] Ibid., p. 224.

[3] Arthur T. Mosher, Getting Agriculture Moving. Essentials for Development and Modernization, (New York: Ferderick A. Praeger, 1966), pp. 60-61.

Without all of these essentials, he believes there will be no agricultural development. The accelerators of agricultural development help to promote it, but they are not essential. Education is classified as an accelerator.[1]

Cancian's study of innovation is based on an analysis of data about more than 6,000 farmers from eight countries, taken from 23 studies. His study relates behavior which is risky or innovative to social position based on economic rank. The findings refine the simplistic view that big wealthy farmers are more likely to adopt innovative practices than small poorer farmers. In short, Cancian finds that among the broad range of farmers that are neither rich nor poor by local standards, those who might be called "lower middle class," are more likely to adopt early than the group which might be called "upper middle class." Further, Cancian, in his discussion of the implications of his study for agricultural development policy, presents the following conclusions which are particularly relevant to this study.

Cancian finds that the average small farmer is innovative in inclination and "apparently open to programs

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[1]Mosher's accelerators include: education, production credit; group action by farmers; improving and expanding agricultural land and national planning for agricultural development.

appropriate in scale to his or her resources."[1] He finds that this attitude applies to the first stage of the adoption process which he defines as the period when an innovation is first introduced. He concludes that the challenge here is is for the policy maker to make the innovation economically viable for the poorer farmers and the biggest problem is to find a way to make that known and understood by the small farmer. He surmises that uncertainty at stage one is the biggest problem, but that by stage two, the biggest problem becomes financial ability.

Thus, Cancian finds that at what he terms stage two of the adoption process, financial ability ultimately determines which farmers can adopt the new practices.

However, most importantly, he concludes that the individual's position in a local community influences innovativeness. Interestingly, he stresses that it is not the amount of resources controlled but the rank of the person in the community, that is the relationship of a person to other people in a defined community.

Finally, he suggests the following, which supports a similar suggestion by Wharton that economic decision making plays an important role in agricultural development. This suggestion is relevant for this study in that improved

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[1]Frank Cancian, The Innovators' Situation: Upper-Middle-Class Conservatism in Agricultural Communities, (Stanford: Stanford University Press, 1979), p. 89.

and increased education would address this problem.

Cancian sums up:

> In general, this study suggests that agricultural development, insofar as it involves the spread of new farming practices, depends heavily on both the local stratification system and the less than fully informed economic decision making that dominates everyday life. The sooner program design explicitly attends to these realities, the sooner it will come closer to achieving its explicitly stated goals.[1]

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[1] F. Cancian, The Innovators' Situation: Upper-Middle-Class Conservatism in Agricultural Communities, p. 91.

C H A P T E R I V

ZAMBIA: MPIKA DISTRICT, NORTHERN PROVINCE

The Province

> Whilst research into the longer term productivity of the soils in the Province is still continuing, the following points should be carefully noted:
>
> (i) Soil acidity is widespread and in many cases (where the pH is below 4.5) the use of lime is necessary to ensure full economic response to fertilizers for crops such as maize, groundnuts, sunflower, cotton, soybeans and field beans.
>
> (ii) On many of the lighter textured soils the use of mineral inputs alone is really only a short term solution and the limitations of such soils should be realised . . .[1]

The physical setting. In Zambia, there is a basic distinction between the Provinces. The Central, Southern and Eastern are highly productive agriculturally. Luapala, Western, Northern and Lusaka Provinces are not particularly productive from the standpoint of marked agricultural production. Some of the reasons for low productivity can be found in the quote above, which refers to the

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[1] Republic of Zambia, Department of Agriculture, Lima Crop Memo Northern Province, Small Scale Farmer Recommendations (Lusaka: Research Branch, 1979), p. 1.

soils of the Northern Province. Here it is clear that factors such as inputs are vital for successful agricultural production. Hybrid maize cannot be grown successfully in this soil without fertilizer and lime.

Rainfall is predictable but intense and it varies from district to district or even village to village (see Table 10). As a result of precipitation rates that often reach over an inch an hour, soils are leached and erosion is common; one village may not have enough rain while another has so much that crops are left damaged and waterlogged. These factors alone, intense rainfall and deficient soil, make it difficult for traditional farmers to move entirely from their citimene system of agriculture to settled farming with hoes and ploughs.[1]

With regard to the Northern Province, it may be generalized that while the soils vary, they are poor and require knowledge and finances for fertilizer and lime to make them productive.

The Northern Province is broken into nine districts, which include Isoka, Kasama East, Mbala, Kasama West, Kaputa, Luwingu, Mporokoso, Chinsali and Mpika. The

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[1]For additional discussion about the difficulties of transition from the chitimene system of agriculture see Charles Elliot and R.A.F. Roberts, "Constraints in Agriculture," in C. Elliot, editor, Constraints on the Economic Development of Zambia (Nairobi: Oxford University Press, 1971), pp. 270-277.

TABLE 10

DISTRICT RAINFALL, 1978/79[1]

Month	Kasama mm.	Chinsali mm.	Mpika mm.
October	29.55	12.31	132.65
November	104.50	55.00	63.40
December	218.35	123.05	202.54
January	268.10	132.87	246.02
February	238.35	188.02	362.53
March	355.40	112.81	256.39
April	131.85	74.67	83.13
May	31.85	2.81	5.67
June			
July			
August			
September			
Total	1,377.95	701.54	1,352.42

[1]Republic of Zambia, Ministry of Agriculture and Water Development, Department of Agriculture, Northern Province Provincial Agricultural Officers' Annual Report 1978-79 Season, p. 34.

population for the entire province is estimated for 1980 at 647,000 people.[1]

Crops, livestock and poultry. The crops grown throughout the Province include both hybrid and traditional maize, rice, wheat, sorghum and millet. Among the legumes grown are groundnuts, beans, soyabeans, sunflower, tobacco, cotton, cassava and sugar cane. The horticultural crops include citrus fruits, deciduous fruits, bananas, coffee and vegetables. Livestock includes beef cattle and oxen, along with pigs, sheep and goats. Among the poultry are chickens, turkeys, ducks, geese, guinea fowl and pigeons. Rabbits and guinea pigs are also kept.

Province-wide agricultural education. The agricultural education activities in the Province are carried out under the auspices of the extension services. This section of the chapter will cover only a broad outline of educational activities throughout the Province. For a detailed discussion of these education efforts, see Chapter V.

In 1978-79, the Provincial Agricultural officer (PAO) termed the province to be well staffed after what was described as two or three years without enough staff or with staff of a low calibre. The total staff included:

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[1]Republic of Zambia, The 1974 Sample Census of Population Second Report, Results and Interim Projections of Population 1974-1984 (Lusaka: Central Statistical Office, January 1979), Table 2.1, p. 21.

TABLE 11

STAFF, NORTHERN PROVINCE

	1978-79
Professional Officers	11
Principal Agricultural Supervisors	6
Agricultural Supervisors	28
Senior Agricultural Assistants	42
Agricultural Assistants	84
Commodity Demonstrators	62
Total Staff	233

Of those listed, the Agricultural Supervisors, Senior Agricultural Assistants, the Agricultural Assistants, and the Commodity Demonstrators are the staff members most likely to have contact with subsistence farmers. If we divide the total of the rural population, 647,000 at 1980 estimates, by the total of these staff members, 216, we find a ratio of 1 staff member for every 2,995 persons.[1]

The following agricultural education activities represent some of the major activities carried out by the extension staff throughout the Province.

[1]Republic of Zambia, 1974 Sample Census of Population, Table 2.2, p. 23.

1. Demonstrations (see Table 12), a breakdown by district and crops, is shown for 1978-79. For Mpika District we note that there were a total of 7 during the period under review. The average for the District would be about 8 for the period 78-79. For the Mpika District alone these are dismal figures. There is not even one demonstration per extension officer. Maize demonstrations were in the majority and almost half the total, though in Mpika District there were only 2. As can be seen in Chapter V, Demonstrations were the most popular of the educational methods in use by the extension service and these figures are a sad comment on the reality of the situation.
2. Field Days (see Table 13), a breakdown by district, number of days and total attendance, is shown for the 1978-79 season. Mpika, with only 4 Field Days during the period under review, was well below the average of about 8 per district. As with the demonstrations, attendance was very uneven and apparently reflects a great range of effort and commitment on the part of the extension staff who administer them. The fluctuations might also represent problems with expenses for inputs for which the extension officers are not reimbursed.

TABLE 12

DEMONSTRATIONS[1]

District	Maize	Beans	S/Flower	Wheat	G/nuts	F/Millet	Rice	Cotton	Total
Kasama East	6	2	4	1	2	3	5	-	23
Kasama West	3	1	1	-	-	-	-	-	5
Chinsali	4	-	-	-	-	-	1	-	5
Mpika	2	-	3	-	-	1	1	-	7
Isoka	4	-	2	-	-	-	4	1	11
Mbala	-	-	2	-	-	-	-	-	2
Mporokoso	7	3	4	2	-	2	-	-	18
Luwingu	3	-	-	-	-	1	1	1	5
Kaputa	1	-	-	-	-	-	-	-	1
Total	30	6	16	3	2	7	12	1	77

[1]Republic of Zambia, Ministry of Agriculture and Water Development, Department of Agriculture, Northern Province, Provincial Agricultural Officer's Annual Report, 1978-79 Season, p. 75.

TABLE 13

FIELD DAYS[1]

District	No. of Field Days	Total Attendance
Mbala	1	30
Isoka	13	1,374
Chinsali	22	621
Mpika	4	750
Kasama West	18	4,344
Luwingu	6	1,412
Kasama East	6	397
Mporokoso	7	1,017
Kaputa	2	65
Provincial Total	69	

[1]Republic of Zambia, Provincial Agricultural Officers' Report, p. 76.

3. Agricultural Shows (see Tables 14-17), a breakdown by location is provided: Ward, District, Province and National Show. Of the farmers interviewed, Agricultural Shows were among the least popular of all the educational methods available. Given the fairly high attendance estimates, one explanation might be that the traditional farmers simply aren't invited. However since they represent the majority, it is not really clear why there appears to be a discrepancy.

4. The Farmer Courses (see Table 18) held at the Farm Institutes and Farmer Training Centers throughout the province are shown along with the proposed and actual programs and attendance details. For the Mpika Farmer Training Center, less than one third of the 16 planned courses were held and only 50 male farmers total participated. The actual number of student days was only 500 out of the proposed 3,620 student days. Judging from Table 18, there was no other use made of the Mpika FTC and this was true of three of the other Farm Institutes and Farmer Training Centers in the District. Only one FTC at Chinsali provided courses for extension staff and staff from other departments. Needless to say, this is an incredible waste of human, plant and equipment resources.

TABLE 14

AGRICULTURAL SHOWS--WARD LEVEL[1]

District	No. Held	Estimated Attendance
Mporokoso	-	-
Kaputa	6	1,330
Luwingu/Chilubi	6	Not given
Kasama East	-	-
Kasama West	-	-
Mpika	4	2,000
Chinsali	18	6,000
Isoka	18	Not given
Mbala	6	Not given
Total	58	

[1]Republic of Zambia, Provincial Agricultural Officers' Report, p. 77.

TABLE 15

AGRICULTURAL SHOWS--DISTRICT LEVEL[1]

District	Date Held	Estimated Attendance
Kaputa	15-16 June	2,500
Isoka	20-21 June	4,500
Kasama	29-30 June	2,400
Mpika	6-7 July	4,000
Chilubi Island	6-7 July	3,500
Mporokoso	14-15 July	2,600
Mbala	13-14 July	4,000
Chinsali	20-21 July	5,000
Luwingu	20-21 July	1,800
	Total	28,300

TABLE 16

AGRICULTURAL SHOWS--PROVINCIAL LEVEL[2]

Place	Date Held	Estimated Attendance
Kasama Showground	27-28 July	14,000

[1]Republic of Zambia, Provincial Agricultural Officers' Report, p. 77.

[2]Ibid., p. 78.

TABLE 17

AGRICULTURAL SHOWS--NATIONAL LEVEL[1]

Place	Date Held	Estimated Attendance
Lusaka National Show Ground	3-6 August	Not given

[1]Republic of Zambia, Provincial Agricultural Officers' Report, p. 78.

TABLE 18

DEPARTMENTAL FARMERS COURSES[1]

Centre	Proposed Programme				Actual Programme							Attendance Details			
									Staff			Farmers			
	Courses Planned	Training Days	Intake	Student Days	Courses Held	Training Days	Intake	Student Days	TO/JTO	A.A.	SAD/CD	Male	Female	SPU/RRC	Other Departments
Mungwi F.I.	16	160	304	3040	2	20	45	450	-	-	26	19	-		
Mporokoso F.T.C.	21	210	541	5410	4	40	131	1310	-	-	-	125	6		
Mpika F.T.C.	16	160	362	3620	5	50	50	500	-	-	-	50			
Isoka F.T.C.	10	100	320	3200	2	10	45	450	-	-	-	45			
Chinsali F.T.C.	19	190	416	4160	7	70	165	1650	-	10	10	31		12	34

[1]Republic of Zambia, Provincial Agricultural Officers' Report, p. 45.

Farmers in the Province. In the Northern Province, a farmer is registered as a "farmer" if he or she has two hectares or more under cultivation. Table 19 shows the number of farmers and area of land under cultivation by crop.

The District

Physical setting. Field research for this study was carried out in the Mpika District of the Northern Province in three Agricultural Camps. A trip was made to the Provincial Headquarters of the Department of Agriculture at Kasama and numerous visits were made to the Headquarters Office of the Department of Agriculture in Lusaka. Throughout the study, references to other areas of Zambia, institutions, and services with agricultural education responsibilities are made whenever applicable.

As one approaches Mpika the vistas are beautiful; rolling hills give way to high ridges in the hazy distance. The vegetation includes fields of tall grass interspersed with tall shade trees and thickets of bushes. The remains of chitimene gardens become more and more obvious as one approaches Mpika. In places, stumps of trees four to eight feet tall dot the landscape.

Population and farmers in the District. Mpika District has a population of an estimated 70,000 people in 1980 and

TABLE 19

FARMERS REGISTERED[1]

		1977/78	1978/79
Total number of farmers		9,512	6,917
Farmers with 2 ha. or more		3,064	2,688
Total Hectares:	Maize	11,684.1	8,487.1
	Sunflower	322.5	154.9
	Groundnuts	569.0	627.5
	Beans	2,191.8	6,101.5
	Sorghum	10.6	17.3
	Millet	2,764.0	2,864.4
	Wheat	30.2	217.7
	Rice	1,255.9	912.1
	Cotton	10.4	21.1
	Vegetables	-	71.1
Total hectares on all crops		19,722.2	15,474.7

[1]Republic of Zambia, Provincial Agricultural Officers' Report, p. 25.

the Mpika township population is estimated at 32,000 for the same year.[1]

The age, ethnic group and sex, and marital status of the farmers interviewed are detailed in Tables 20, 21, and 22.

All the farmers were asked what type of farmer they thought they were, and then what type of farmer they would like to be. It is interesting to note that 92% think they are subsistence farmers and 86% would like to be either a commercial or emergent farmer (see Tables 7 and 8).

With respect to labor, inputs and implements, each farmer was asked either if they use any of the following or, where appropriate, if they own them (see Tables 23 and 24).

Table 25 shows the distribution of farmers with cash income vis-a-vis the amount of land they estimated they were using.

The field and garden crops grown by the farmers sampled is shown in Table 26, along with an indication of the purpose and satisfaction of the farmer.[2]

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[1]Republic of Zambia, The 1974 Sample Census of Population, Second Report, p. 10.

[2]K. Garvey et al., "Preliminary Findings," Table 10, Question A.1.25, p. 3.

TABLE 20

AGE OF FARMERS[1]

	19 & Below	20-29	30-39	40-49	50-59	60-69	70-79	79 & Upwards
Males	0	1	8	4	6	8	4	1
Females	1	5	4	8	6	3	1	1
Total	1	6	12	12	12	11	5	2
Both	52% below 50 yrs, 47% over 50 yrs, 1% not asked							

TABLE 21

ETHNIC GROUP AND SEX[2]

	Total Sampled	Male	Female
Bemba	36	21	15
Biza	24	12	12
Other	2	0	2
All Sampled	62	33	29
Total %		53%	47%

[1] K. Garvey et al., "Preliminary Findings," p. 7.

[2] Ibid., p. 8.

TABLE 22

MARITAL STATUS[1]

	Male	Female	Total
1. Single	0	0	0
2. Married	33	25	58
3. Separated	0	0	0
4. Divorced	0	1	1
5. Widowed	0	2	2
6. Not Asked	0	1	1

TABLE 23

LABOR USE[2]

Hired Labor* For:	No. of Farmers Using
Stumping	23
Planting	16
Harvesting	17
Cultivating	7
Ridging	1
Other	-

* Of these, 12 hire labor for stumping, planting and harvesting; 3 hire labor for planting and harvesting.

[1] K. Garvey et al., "Preliminary Findings," p. 8.

[2] Ibid., p. 5.

TABLE 24

IMPLEMENTS AND INPUTS[1]

Use of	Using		No Response
	Yes	No	
Hybrid seed	32	23	7
Rotation	35	20	7
Fertilizer	36	19	7
Manure	29	26	7

Implements	No. Owned	
Hoes: 1 - 5	47	
6 - 13	13	
Axes: 1 - 3	54	
4 - 6	5	
Radio: 1	23	(3 not working)
2	2	
Plough	3	
Scotch Cart	1	
Bicycle	39	(3 not working)
Sledge	0	
Oxen	2	(borrowed)

[1]K. Garvey et al., "Preliminary Findings," p. 9.

TABLE 25[1]

FARMERS' LAND AND INCOME ESTIMATES

	No cash Income	K 1-50	K 51-100	K 101-500	K 500 +
1/4 hectare (1 lima)	7	4	1	2	0
1/2 hectare (2 limas)	4	4	3	1	0
3/4-2 hectares (3-4 limas)	7	0	0	5	0
2½-3 hectares (5-6 limas)	2	2	2	3	1
1 Chitimene garden	8	5	4	3	0
2 Chitimene gardens	3	0	0	1	0
3 or more chitimene gardens	2	2	2	0	0
1 home garden	14	7	2	9	1
2-5 home gardens	4	0	1	2	0
1 field crop plot	21	5	6	8	0
2-5 field crop plots	4	2	3	3	0
6 or more field crop plots	0	0	0	2	1

[1]This table was included (as Table 11) in the report "Preliminary Findings" by K. Garvey, T. Muchenje, A. Sakala, C. Simuyemba, p. 4. However, for the purposes of clarity it has been divided here into two sections.

TABLE 26

CROPS GROWN BY FARMERS FOR SALE OR FOOD[1]
N: 62

Crops Grown	Yes	Is it enough for sale: No	Is it enough for sale: Yes	Is it enough for sale: No Inform.	Grown for Sale	Is it enough for sale: No	Is it enough for sale: Yes	Is it enough for sale: No Inform.	% For Sale Enough	% For Food Enough
Maize	38	2	36	0	6	3	3	2	94.7	50.0
Hybrid Maize	31	2	27	2	14	1	9	4	87.0	64.2
Millet	36	2	31	3	4	8	6	2	86.1	75.0
Sorghum	14	1	12	1	5	0	3	2	85.7	60.0
Cassava	46	3	41	2	12	3	8	1	89.1	66.6
Rice	6	0	4	2	2	1	1	0	66.6	50.0
Beans	39	6	32	1	9	5	4	0	82.0	80.0
Pumpkin	36	7	29	0	5	1	4	0	80.5	80.0
Groundnuts	40	4	34	2	8	2	6	0	85.0	75.0
Sweet Potato	34	3	31	0	12	3	9	0	91.1	75.0
Irish Potato	8	2	6	0	1	0	1	0	75.0	100.0
Vegetables	30	2	26	1	14	4	10	0	86.6	71.4
Cotton	-	-	-	-	3	1	2	1	-	66.6
Tobacco	0	0	0	0	0	0	0	0	-	-
Soyabeans	7	0	6	1	0	0	0	0	85.7	-
Banana	36	8	24	4	8	3	5	0	66.6	62.5
Citrus	15	5	8	1	3	2	1	0	53.3	33.3
Local Fruit	24	9	14	0	6	3	3	0	58.3	50.0

Note: No information means either not asked or not answered.

[1] K. Garvey et al., "Preliminary Findings, p. 10.

Agricultural education, District. In the Mpika District there are a total of 23 extension staff involved in direct extension work. Out of 23, six have very little direct contact with subsistence farmers. Accordingly, 18 are actively working with subsistence farmers in over 300 villages, a ratio of approximately 666 farmers per extension worker.

Fourteen Agricultural Camps in the District have one Agricultural Assistant each. Three additional Camps have no staff whatsoever (Mupamadzi, Mabonga and Lufila), and two new Camps need to be created at Mbati and Kambinga to reduce the overload on the existing Camps. There are four Farmer Training Centres, at Mpika, Mporokoso, Isoka and Chinsali, and the Farm Institute for the Province is located at Mungwi near Kasama.

The basis for selection of the three camps where the field work took place was proximity to Mpika. It was speculated that the closer the Agricultural Camp to Mpika, the more likely that both men and women would have had a chance to attend various agricultural education activities and therefore some would be growing cash crops, especially hybrid maize. The Agricultural Camps chosen included Mpika Main in and surrounding the town of Mpika itself; Chalwe Camp, which is approximately 20 miles down the road from Mpika but includes villages several hours' walk from the Camp in places where there are no roads; and Kopa Camp

which is 60 miles from the administrative and urban area of Mpika off the main road and accessible during the rainy season by four-wheel drive vehicles.

Villages visited. Table 9 gives the number of farmers interviewed, male and female, in the villages of the three Agricultural Camps.

Kopa Agricultural Camp

The Agricultural Camp consists of the home of the Senior Agricultural Assistant for Kopa. It is surrounded by fields of traditional and hybrid maize, belonging to the Agricultural Assistant and some belonging to the Chief, whose home is a short distance up the road.

The villages. Within Kopa there were three distinct areas visited and what follows are descriptions which are meant to give a feeling for the places visited in order to bring the reader in touch as closely as possible with the setting.

Cassava and fishing community. Kapumfi, Chalumwenge, Chalinda and Chitonge lie along Lake Bakabaka, approximately 20 kilometers from Kopa. The road ran only as far as Kapumfi and from there the farthest village we visited was about one and a half hours by foot. The path used was built up between one and two feet above ground

level, presumably to make travel easier if the lake overflowed during the rainy season. All the villages were in sight of the lake and fishermen could be seen in canoes. The houses were either mud with grass roofs or burnt brick houses with grass roofs. See page 133 for illustration. Houses were scattered all along the footpath, usually within sight of the path. Most were surrounded with vegetable gardens, stands of bananas and occasional shade trees. In addition to the main house there were bathing enclosures, grass-shaded pounding areas, children's sleeping quarters and kitchen areas. The houses for the most part were built up on stoops, a common practice. This area differed from others in that there were very few large shade trees and in general one had the feeling that one was really on a flood plain.

Fishing appeared to be the job of men, as more than one woman put it. We did not see any fresh fish, though we had hoped to buy either fresh or dried fish. The only fish we saw, in fact, were on the back of a bicycle in a typical bark-wrapped bundle on the way to the market.

Cassava is the staple, supplemented by chitimene gardens, field crops and home gardens. Gathering is common practice and women complained that it took many hours. Hybrid and traditional maize is grown to some extent and millet is used for both porridge and brewed for beer.

Figure 4. Lake Baka Baka and the villages visited around the lake and elsewhere in Chief Kopa's area. Original map hand drawn in india ink by T. Masulo based on information provided by the Agricultural Assistant responsible for the area.

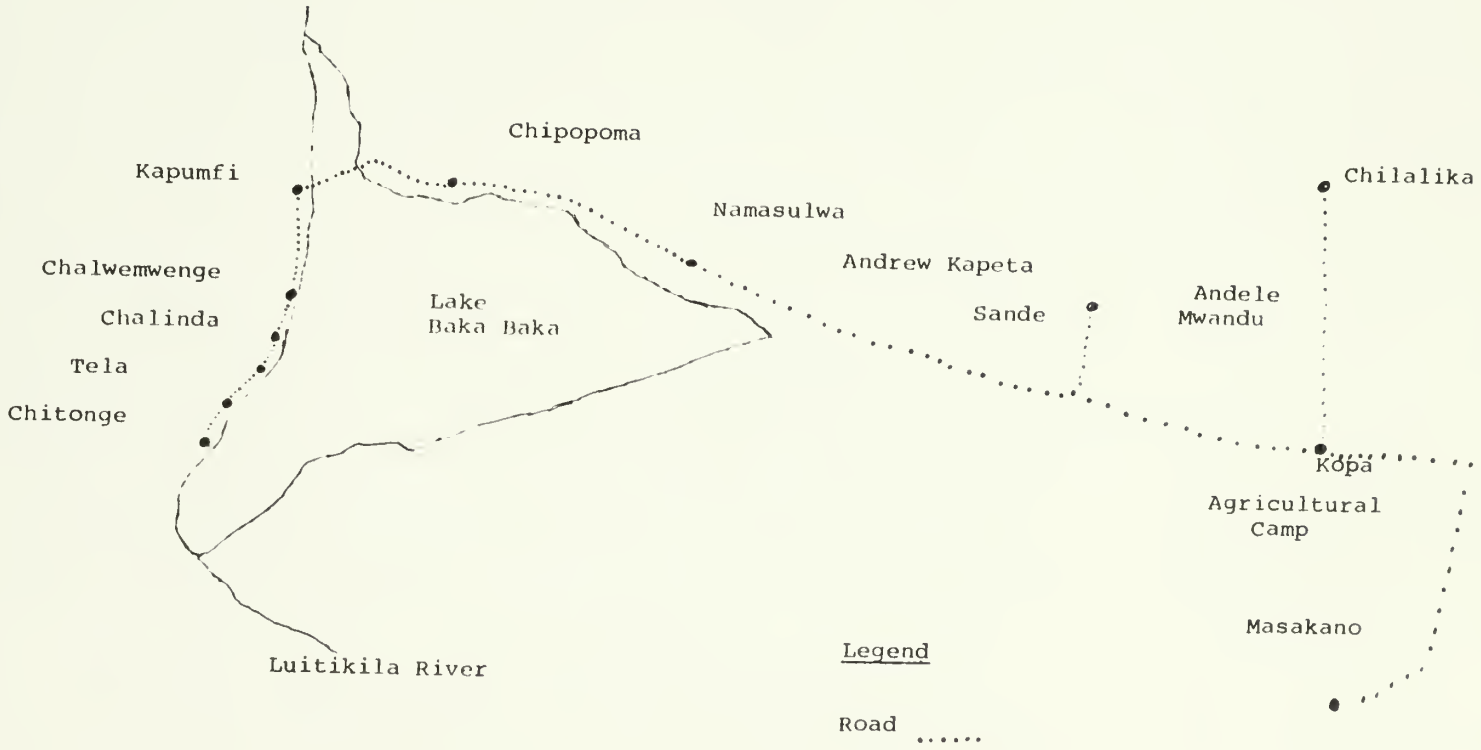
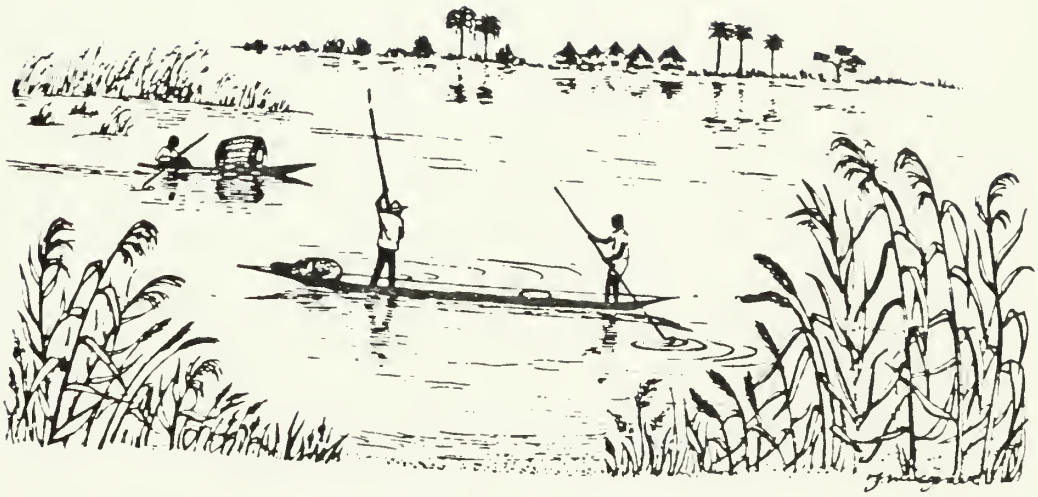

Chipopoma
Kapumfi
Chilalika
Namasulwa
Chalwemwenge
Andrew Kapeta
Lake
Baka Baka
Chalinda
Sande
Andele
Mwandu
Tela
Chitonge
Kopa
Agricultural
Camp
Masakano
Luitikila River
Legend
Road

Figure 4.

Figure 5. Typical scenes illustrating Lake Baka Baka and a village in Chief Kopa's area. The top scene is from a commercial card with no attribution and the bottom scene is from a card titled "Carrying Water" by Petra Ruhr-Rouendaal, printed and published in Botswana.



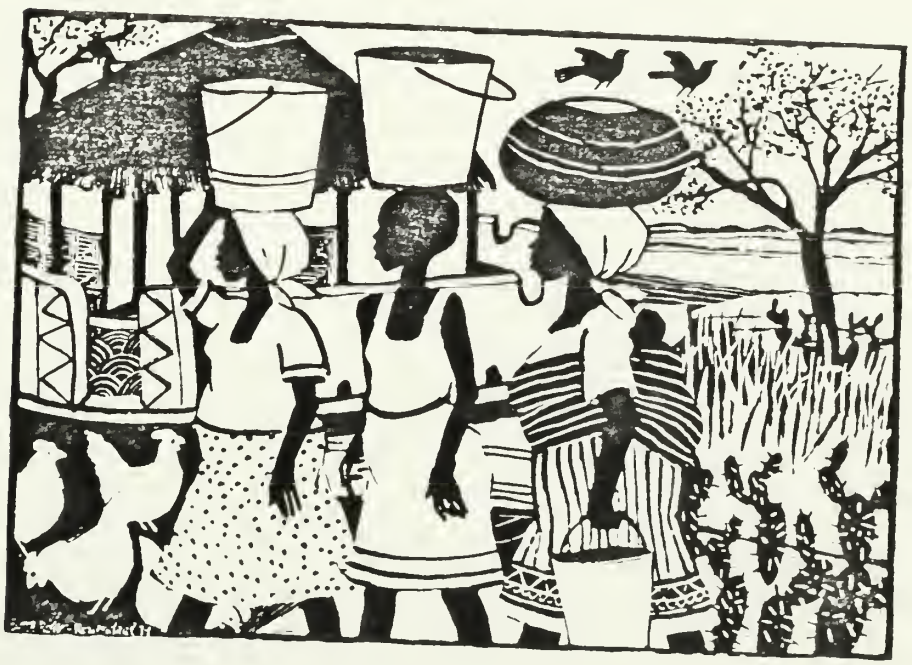


Figure 5.

Kopa and villages near the Agricultural Camp. These villages, which included Chysopoma, Namasulwa, Andrew Kapeta, Sande, Chilalika, Andele Mwandu, were composed of square mud-walled houses and burned brick houses, all with grass roofs. Women generally had well built cooking huts with no sides or half sides. There were separate covered areas for pounding cassava, millet or sorghum. While the houses and buildings in general had an air of prosperity about them, the condition of the children seemed worse than children we found in other parts of Chief Kopa's area. Virtually the same crops as described above for the area along the lake are grown here. Everyone seems to have a chicken or two but there were many complaints throughout Chief Kopa's area that chickens were killed by both disease and a small type of rodent. It was in this area that a lady was interviewed whose goats had recently been eaten by lions.[1] These were the only livestock we heard of in this area which, to a great extent, is plagued with the tsetse fly.

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[1]When we had arrived in Chief Kopa's area we immediately went to see the Chief who told us we could stay at the nearby primary school. The headmaster at the primary school warmly welcomed us and offered us an empty teacher's house which he apologized had no doors. The house actually had doors of canes fastened together. We replied that it didn't matter as long as there were no thieves. In turn he said there were no thieves, just lions. We thought he was kidding and until this interview we had moved quite freely at dusk, gathering wood and going to the water hole, about half a kilometer from the house, for bathing and fetching water.

Masakano farmers. The Luitikila area is very prosperous in terms of good soil, which prompted one farmer to tell us that if they had water pipes for irrigation from the river and tractors for ploughing, they could feed the nation. Masakano and the Nchumbula were about an hour by Landrover, southeast of Kopa. Maize was extensively grown, including hybrid maize, along with cassava. Houses were again well built, some of burned brick and others of mud. Those of burned brick were usually square in shape and those of mud were usually round. All had grass roofs. Farmers were plagued by monkeys and those with chickens were plagued by small rodents and disease. There was no livestock, as this was a tsetse fly area. On the way we gave the medical officer a lift in the back of the Landrover. He was on his way to visit some people who had contracted sleeping sickness from the tsetse fly.

Chalwe Agricultural Camp

On arrival in Mpika, for the first week we stayed in an empty house at the Mpika College of Agriculture, about two hours' walk from the Agricultural Camp headquarters. Every day we walked from the College to the villages surrounding the college and scattered throughout the Chalwe Camp area. These included Chintu, Chitindi, Makasa, Mushamba, Nfukwe, Nkupisha, and Nsefu.

The Chintu Block is the most distinct of the areas we went to in the Chalwe Camp from the point of view of its history of top drawer development assistance.

The Chintu Block farmers were the only farmers within reach of the college who had had visits from college students and staff. These visits were part of students' practical training in farm management and planning. In 1960 and 1961 a study was done of the Luitikila Basin Development area, which has an abundance of water resources and good soils. The Chintu Block area borders the Great North Road and has highly fertile soils while the area on the opposite side of the road is not fertile. The Mpika College of Agriculture staff complained more than once about the large amounts of fertilizer they had to use for their maize. They pointed out that the Chintu Block is underutilized and they wish that the land had been allocated to the College.

The rest of the villages differed from those in Kopa and Mpika in the sense of identity. Each of the villages was in a distinct, usually lovely, setting, on a plateau or ridge. Some villages were reached after long walks through lovely forests, and many were inconvenienced by streams for which there were either only foot bridges or semipermanent structures, often not strong enough to support a vehicle like the much-coveted tractor. Most of the ground preparation is done by hoe, but a tractor is

Figure 6. Typical village scene from the Chalwe Camp area. Original drawing by T. Masulo based on the work of Moyo and Lubasi.

Figure 6.

available in the area and there was great enthusiasm on the part of most people interviewed, no matter what size their farm, for tractors. Most of the houses were round, mud walled, with grass roofs.

Mpika Main Agricultural Camp

This Camp covers an area around the town of Mpika. From the Mpika Farmer Training Center, where we stayed, we walked anywhere from 10 minutes to one hour to villages surrounding the urban area. These included Chisowa, Chitulika and Mutengo. In this area we avoided quite a number of houses which were brick with metal roofs and metal door and window frames. Here we actually chose not to talk to various people if their houses looked too prosperous, even when they were willing to be interviewed. In one case we did not talk to a man because we were trying to make up a shortfall of women for this sample and he was not sure about allowing his wife to be interviewed. Here, at least two women we started to interview left us to go and finish pounding millet and we had to follow to finish the interview while they worked.

Figure 7. Typical village scene illustrating the Mpika Main Agricultural Camp area. Original work by T. Masulo based on the work of Moyo and Lubasi.

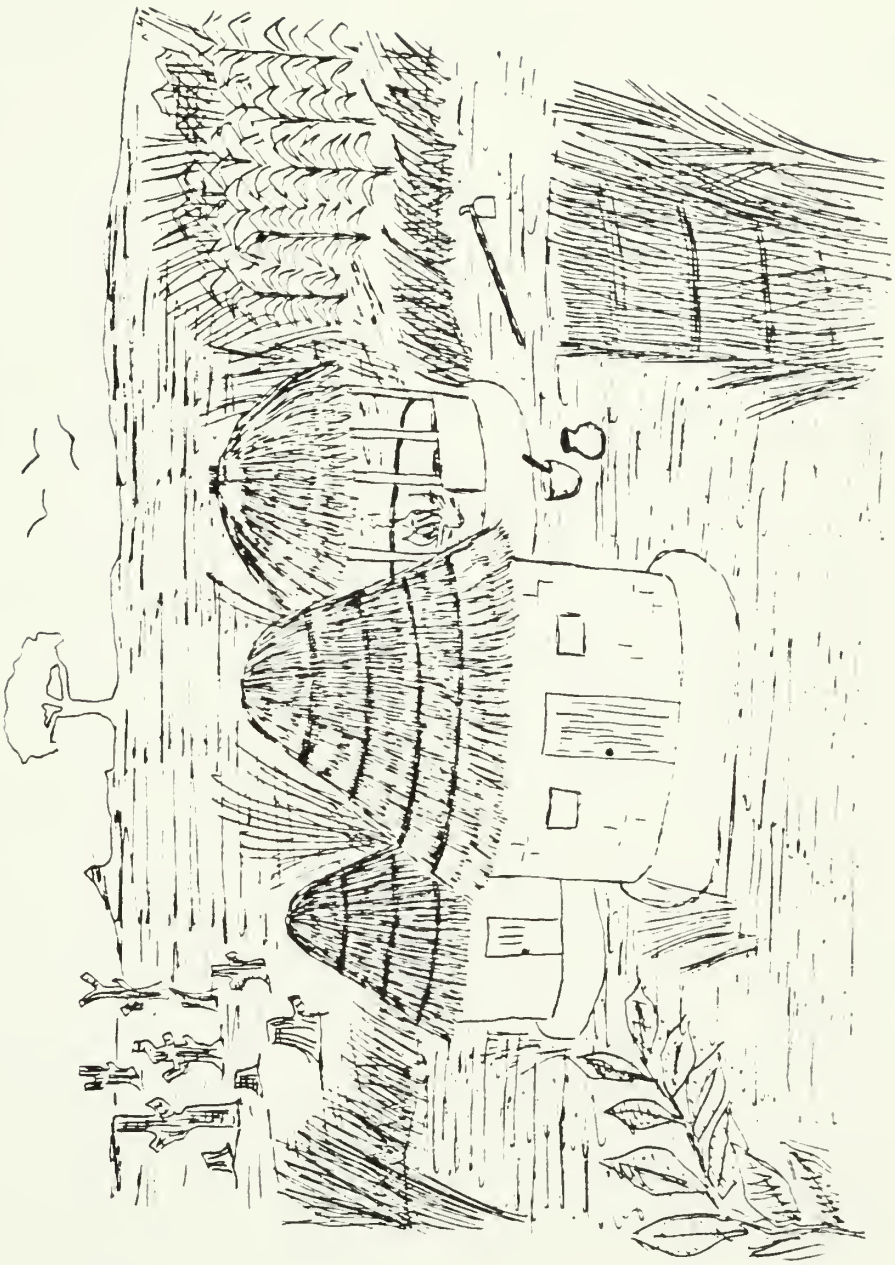

Figure 7.

C H A P T E R V

EDUCATION METHODS AND CONTENT AS THEY RELATE TO AGRICULTURAL EDUCATION

Introduction

This chapter is confined to both the overview and analysis of methods and content as they relate to agricultural education. The following issues are considered: the use of appropriate methods of adult education (as opposed to reliance on the use of the lecture method); the use of farm institutes and farmer training centers; the use of the training and visit system; the use of the radio and written materials; literacy and illiteracy; community development programs; education about traditional subsistence crops such as cassava, millet and sorghum; education about sunflower and crops other than maize.

The data from the field research is presented, discussed and analyzed. Observations and findings are reported at the end of the chapter.

Objectives. The following specific objectives relating to educational methods and content in agricultural education formed the basis for the literature review and data collection for this study:

- Determine what methods of transmitting agricultural education have an effect on subsistence farmers' learning and understanding of new knowledge and techniques for crop, livestock and poultry production.
- Determine what knowledge and skills about agricultural production are gained from non-formal agricultural education programs.
- Determine what factors seem to influence utilization of new knowledge and techniques in agricultural production.

Discussion of the Data

The result of this chapter is that a number of methods and content factors related to agricultural education of subsistence farmers are identified.

Agricultural education of subsistence farmers is the primary responsibility of the Department of Agriculture, extension branch. Education is provided by extension personnel based in agricultural camps and by specialist officers who are based in the District and Provincial Offices of the Department of Agriculture. Extension personnel also serve as training staff at the Farm Institutes and Farmer Training Centers. In addition, the Department has a youth extension officer responsible for the organization of young farmers' clubs for out-of-school youth. There is also a female extension service which provides agricultural and home economics education to rural women.

The National Farming Information Service provides technical information to farmers through broadcasts and

booklets published in English and local languages. Discussion groups called Radio Farm Forums, where village farmers gather to listen to and discuss radio programs, are led by extension staff. The Community Development Department provides agricultural education as part of its functional literacy program. It also stimulates joint self help programs with farm families, which include construction or repairs and upgrading of housing, water supplies, health clinics, feeder roads and bridges. Formation of women's clubs is another of its responsibilities. According to the Third National Development Plan, there are over 1,300 women's clubs in rural areas with a total membership of 18,000 women. Church homecraft centers are also subsidized for providing domestic science training. Agriculture is taught in conjunction with the functional literacy courses in the rural areas and the agricultural assistants are responsible for providing the agricultural education.

Village Productivity Committees are responsible for communicating government policy and providing a forum for discussion of local development problems and potential solutions. Research Station personnel occasionally teach groups of farmers or extension staff about the findings or techniques of dealing with some agriculture related problem. Agricultural education is also provided tangentially by Cooperative personnel; local school personnel; mission personnel; veterinary assistants; health assistants, and

neighbors and friends.

Both farmers and extension personnel were asked which of the above sources and other methods and techniques of education had, in fact, helped farmers during 1979 or, if they were available, would they be a source of help with agriculture. The most significant responses from farmers ("Have helped a lot") included: Demonstrations, 21; Farm Institute or Farmer Training Centers, 18; and Radio Farm Forum in Bemba. The most significant responses from extension personnel ("Have helped (farmers) a lot") included: Demonstrations, 32; General Extension visits to the farm or home, 31; Farm Institute or Farmer Training Centers, 28. In addition, 21 farmers indicated that Community Development Programs in literacy, agriculture, nutrition, etc., "If available would help a lot."

Before going on to details about methods and content of agricultural education, it is useful to consider the educational background and attitudes related to education of the farmers involved in the field research.

The levels of the education reached by the farmers interviewed is outlined below. The farmers were also asked if they had a chance to further study what would they like. Agriculture was the choice of the majority, 39%; education, including literacy and teacher training, was the choice of 22%; home economics was the choice of 10% of the women; and both women and men wanted professional education in

TABLE 27

EDUCATIONAL SOURCES, METHODS AND TECHNIQUES[1] FOR AGRICULTURAL EDUCATION OF FARMERS
Extension N: 53, Farmers N: 62

Education Sources, Methods and Techniques		Have Helped in 1979						If Available Would Help						Total	
		a lot		a little		no help		a lot		a little		no help			
		F	E	F	E	F	E	F	E	F	E	F	E	F	E
F.I./F.T.C.		18	28	6	10	5	3	12	-	12	-	-	-	53	41
Field Days		13	26	7	13	4	-	9	-	15	-	-	-	48	39
Demonstrations		21	32	8	5	3	-	15	-	8	-	-	-	55	37
Agricultural Shows		5	20	15	16	9	-	4	5	15	-	-	-	48	41
Radio Farm Forum & Rural Notebook:	Bemba	16	19	11	17	8	6	7	-	10	-	2	-	54	42
	English	2	5	3	10	7	8	1	-	4	-	5	-	22	23
Posters		13	12	5	19	7	4	12	-	7	-	3	-	47	35
Booklets/Leaflets/ Magazines:	Bemba	13	16	2	15	6	4	7	3	11	-	1	-	40	38
	English	3	4	1	9	7	8	2	1	4	1	2	-	19	23
Comm. Dev. Program (literacy, agr., etc.)		5	18	4	8	6	10	21	-	11	-	-	-	47	36
Party Committee		4	3	4	4	17	3	2	-	12	-	4	-	43	10
Village Prod. Committee		11	12	13	11	10	10	4	4	7	-	1	-	46	37
Cooperative Personnel		3	9	4	13	15	9	4	3	19	-	4	-	49	34
Local School Personnel		9	14	3	10	17	8	1	3	18	2	2	-	50	37
Mission Personnel		13	12	10	10	21	9	3	2	8	-	5	-	60	33

TABLE 27 (Cont.)

Education Sources, Methods and Techniques	Have Helped in 1979						If Available Would Help						Total	
	a lot		a little		no help		a lot		a little		no help			
	F	E	F	E	F	E	F	E	F	E	F	E	F	E
Church Personnel	-	13	-	8	-	7	-	2	-	1	-	-	-	31
Neighbors/Friends	11	17	13	11	22	6	1	-	4	-	2	-	53	34
Specialist Extension (poultry, cattle, hort.)	4	17	6	9	1	5	7	5	7	1	1	-	26	37
Res. Station Personnel	-	15	6	11	10	8	2	5	16	-	1	-	35	39
Veterinary Assistants	1	20	4	7	4	8	3	2	7	-	1	-	20	37
Health Assistants	13	12	9	9	5	10	8	2	8	1	1	-	44	34
Gen. Extension visits to farm or home	13	31	13	6	5	-	10	-	11	1	1	-	53	38
Gen. Extension visits by farmers to village/camp	11	18	11	14	7	3	2	-	14	1	2	-	47	36
School Prod. Unit	-	21	-	8	-	6	-	2	-	-	-	-	-	37
Young Farmers Club	-	20	-	9	-	4	-	-	-	-	-	-	-	33
Frequent follow-up visits to farmers after they have attended a course/demon.	-	22	-	6	-	3	-	1	-	-	-	-	-	32

Key: F = Farmers; E = Extension

[1] K. Garvey et al., "Preliminary Findings," Table 64, Questions A.2.03; C.8.03; D.13.06; F.18.00, p. 59.

bricklaying, carpentry, etc., 26%.

TABLE 28

FARMERS, LEVEL OF EDUCATION[1]
N: 62

	Male	Female	Both
Sub-Standard A to Standard 2 (Grades 1-4)	10	9	19
Standard 3 to Standard 6 (Grades 5-7)	10	5	15
No formal school	19	8	27
Form 1 and 2 (Grades 8-9)	0	0	0
Form 3 to 5 (Grades 10-12)	0	1	1
Total	39	23	62

[1]K. Garvey et al., "Preliminary Findings," Table 17, Question A 1.10, p. 20.

TABLE 29

FARMERS CHOICES OF FORMAL EDUCATION[1]
N: 46

Field of Study	Male	Female	Both	Percent of Respondents[2]
Agriculture	11	7	18	39%
Education*	4	6	10	22%
Home Economics	0	5	5	11%
Other	9	4	13	28%
No Response	10	6	16	

*Note: Education includes those that want to be teachers and those that want to learn to read and write.

Farmers were also asked if they could read or write and then if they felt that it was necessary to be able to read and write in order to improve or increase farming knowledge and practice. Extension staff were also asked this latter question. Some authors actually test the interviewees' ability to read but for the purposes of this study, it was not considered essential. In addition, it would have been time-consuming and possibly would have broken the conversational atmosphere of the interview

[1]K. Garvey et al., "Preliminary Findings," Table 20, Question A.5.06, p. 21.

[2]Throughout this dissertation percentages are based on the total number of actual respondents, not the total of the sample.

process. (For extension personnel, the time was usually shorter.)

The number of farmers who said they were literate was 62%, of which 66% were males and 34% females. On the other hand, 36% of the males and 64% of the females were illiterate.

TABLE 30

FARMERS' LITERACY[1]
N: 62

	Yes	No	Not Answered	Total	Percentages Yes	No	Not Answered	Total
Males	24	8	1	33	73%	24%	3%	100%
Females	12	14	3	29	41%	48%	10%	100%
Total	36	22	4	62				

The need for literacy is controversial. As can be seen from the results below, both farmers and extension personnel were almost evenly divided as to whether literacy is needed to improve or increase farming knowledge and practice. Of the farmers who responded, 48% indicated that literacy is necessary, and among the extension personnel, 57% concurred. Conversely, 52% of the farmers and 43% of

[1]K. Garvey et al., "Preliminary Findings," Table 14, Question A.1.12, p. 18.

the extension personnel said 'no' it is not necessary. Among the favorite forms of agricultural education were the following, which do not necessarily require reading and writing: group discussion, demonstrations, popular theater and learning by working and doing. These are discussed in more detail on Table 49.

In the course of the field work, we saw approximately two pieces of farm related literature. Though we did not ask to be shown literature, these were proudly shown to us by the farmers we were interviewing. We did not notice any books or papers of any kind in other houses we visited. We did not always go inside, of course, and the houses sometimes had more than one room. When we visited the Nambord[1] shop in Mpika to look at the available inputs we did not see any literature. It is possible that there was some behind the counter. We did ask if the Nambord staff ever instruct the farmers on how to use the various inputs which they were selling, and they replied yes. The shop contained a number of bottles and tins which had simple labels with the chemical name of the contents. There were no directions on use printed on the labels. The bags of seeds and fertilizers and the containers of

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[1] "Nambord" is short for National Agriculture Marketing Board. It is responsible for: making inputs (fertilizer, seeds, etc.) available; buying and collecting farm produce; and until 1980 selling locally produced crops at controlled prices.

TABLE 31

FARMERS AND EXTENSION STAFF OPINIONS ABOUT THE NEED TO READ AND WRITE[1]
Farmers N: 62
Extension N: 47

	Farmers				Extension			
	Yes	No	No Info	Total	Yes	No	No Info	Total
Is it necessary to read and write to improve?	28	30	4	62	20	15	1	36
Comments:								
Hard work and determination is enough		22				5		
Learn by doing		9				6		
Speeds up learning	8				13			
Helps efficiency keeping records	10				10			
Helps memory	6				0			
No reason given	3				2			

[1]K. Garvey et al., "Preliminary Findings," Tables 15 and 16, Questions A.2.05; C.8.05; D.13.05, p. 19.

vegetable seeds were suitable for large plots. It seemed impossible to imagine the farmers we were visiting buying that much for their small plots of land. It also seemed rather implausible to expect that the Nambord or extension staff might reach all those purchasers with the correct details on how to use the various inputs.

The Lima Program, which was new at the time of the field research for this study, provides for the sale of seeds, fertilizers and insecticides and herbicides in the precise amounts needed for a Lima or quarter of a hectare of land. If this aspect of the policy had been implemented, it seems like a practical sound step in the right direction for the situation which is complicated by illiteracy and lack of instructional materials.

In order to give a clearer idea of the educational and related background of the people who participated in the interviews, the following are some details about the extension staff interviewed. Extension staff were asked to describe their fields of specialization. As can be seen from the table below, the staff described their fields of specialization almost equally between General Extension and general agriculture, totalling 20, and Specialist Staff, 23. In view of the fact that females are thoroughly involved in agriculture, it was disappointing to see that only one of them was working in a specialty field other than home economics and nutrition.

TABLE 32

FIELDS OF SPECIALIZATION OF EXTENSION STAFF[1]
N: 54

	Total Both	Male	Female
General Extension	14	14	-
General Agriculture	6	6	-
Nutrition/Home Economics	6	-	6
Specialist Officers (Livestock, poultry, horticulture, farm management)	24	22	2
Information	1	1	-
Youth	2	2	-
Research	1	1	-
Total	54		

Extension staff were asked if extension work is a career. The purpose of this question was to try to determine if staff were dissatisfied with their work or the administration of the extension service. The replies are overwhelmingly affirmative. This may well have been because they worried that their responses might fall into the hands of their superiors. On the other hand, a number of the questionnaires were completed anonymously and mailed in, and no interview was involved.

[1] K. Garvey et al., "Preliminary Findings," Table 31, Questions C.7.10; D.12.12; E.17.10; p. 37.

TABLE 33

EXTENSION, IS IT A CAREER?[1]
N: 54

	Yes	No	No Reply	Total
Extension Staff	49*	4**	1***	54

* One person replied yes and no and only the yes is recorded.

** Two are Swedish expatriates planning to go back to Sweden in the near future.

*** The person who did not reply is a Norwegian national, presumably returning to Norway in the future.

Extension staff were asked what their previous work experience had been. This was asked to try to determine from what types of positions people were promoted and to what extent people with relevant experience were in the extension service. Studies of extension services in general often cite the low competence level of staff and the lack of ability of extension services to compete favorably for qualified staff with other government departments.

In the course of the interviews with extension staff, the job base or location for work of each of the staff was noted as part of an effort to have a sample which

[1] K. Garvey et al., "Preliminary Findings," Table 32, Questions C.7.12; D.12.15; E.17.11; p. 37.

TABLE 34

EXTENSION PREVIOUS WORK EXPERIENCE*[1]
N: 54

	Male	Female
Commodity Demonstrator (CD)	15	1
Farmer	-	-
Agricultural Assistant (AA)	10	3
Specialist Agricultural Officer	9	-
District Agricultural Officer (DAO)	2	-
No experience	2	3
Commercial Experience: Tailoring, Teaching	4	1
Other Agri. Officer in charge Training Officers	16	-
Same job	1	-
No response	4	-

* Includes all past work experience cited by each of 54 respondents.

[1] K. Garvey et al., "Preliminary Findings," Table 53, Questions C.7.08; D.12.11; E.17.07; p. 50.

TABLE 35

EXTENSION STAFF JOB LOCATION[1]
N: 54

		Male	Female	Total
Farm Institute		2 Mungwi	1 Mungwi	3
Farmer Training Center		5 Mpika	2 Mpika	7
Agricultural Camp (specify):	Kopa	1	-	1
	Mpika	1	-	1
	Chalwe	2	-	2
	Luchembe	1	-	1
District Office (specify):	Kasama	1	-	1
	Mpika	4	-	4
Provincial Office (specify)		6	2	8
Research Station		1	-	1
Headquarters		6	3*	9
Mpika College		16	-	16
Other (specify)				
	Total	46	8	54

* One woman answered Headquarters and provincial office. Only the response for headquarters is counted here.

[1] K. Garvey et al., "Preliminary Findings," Table 5, Questions C.7.06; D.12.10; E.1.Background, p. 50.

included the staff from Camps in the Mpika District, the District Offices, the Provincial Offices and the headquarters office. In the course of these interviews, every staff member in the three camps visited was interviewed and every female extension staff member we could find was interviewed. An effort was also made to interview specialists of all types.

Children were viewed as barometers for the purpose of this study. Their attitudes and aspirations may be an insight into the future of Mpika District.

Children were asked two related questions which were designed to assess indirectly the permanency of the residents. The Northern Province is known historically as a source of labor for the Copper Mines and a place to retire to after a lifetime of work somewhere else. Children were also asked if they live with their parents. The results of both questions are detailed below.

TABLE 36

CHILDREN: LENGTH OF TIME IN MPIKA DISTRICT[1]
N: 80

Length of Time	Male	Female	Total
1 month - 5 years	20	9	29
6 years - 11 years	11	6	17
12 - 20 years	9	10	19
Not asked	8	7	15
Total	48	32	80

TABLE 37

CHILDREN LIVING WITH PARENTS?[2]
N: 80

Yes	No	Not Asked	Total
70	9	1	80

Children were also asked questions about their school attendance and level and how long they wanted to continue in school. Adult farmers were also asked how long they wanted their own children to continue in school.

[1] K. Garvey et al., "Preliminary Findings," Table 5, Question B.6.07, p. 9.

[2] Ibid., Table 7, Question B.6.06, p. 9.

TABLE 38

CHILDRENS' ATTENDANCE AND LEVEL[1] IN SCHOOL
N: 80

Responses	Male	Female	Total
No	4	4	8
Grade 1-6	22	9	31
Grade 7 and awaiting Grade 7 results	16	8	24
Form I - V	1	15	16
Other	0	1	1
Total	43	37	80

The most visible difference is between the children and adult responses with respect to "University" education. Thirty-three children want to continue as far as the University and only 9 adults wanted their children to reach the University level in education.

Children were asked what occupations they would like to have. They were asked a number of questions with respect to agricultural occupations. At the end they were asked in effect what they would really like to have as an occupation, and 70% indicated fields outside of agriculture. See Chapter VII, pages 250 and 251. Male and female farmers were also asked what they would like their children

[1] K. Garvey et al., "Preliminary Findings," Table 38, Questions B.6.08, B.6.09, p. 30.

TABLE 39

DURATION AND TYPE OF CONTINUED STUDY[1]
N: 80

	Children			Adults		
	Male	Female	Total	Male	Female	Total
Grade 7	1	0	1	1	0	1
Form V	16	10	26	13	10	23
University	13	20	33	6	3	9
Own Choice*	-	-	-	6	10	16
Other**	2	6	8	5	5	10
Don't Know	3	9	12	1	2	3
Total Interviewed			80			62

* Adults only indicated that it was up to the child to choose how long and what type of study he or she wanted.

** Note: "Other" includes technical and professional occupations such as agriculturalist, pilot, doctor and teacher.

to have as occupations. Interestingly, 37% said it was the choice of the children. On this question alone 55% of the women respondents out of the total of 29 women interviewed felt that it was the child's own choice. Out of 33 men interviewed, only 21% felt it was the child's own choice. The occupation which was the leading choice of both men and women was "Farmer," with 16% of 62 respondents choosing it.

[1] K. Garvey et al., "Preliminary Findings," Tables 36 and 37 combined, Questions A.5.04 and B.6.10, p. 30.

The fact that 34% of both men and women would choose specific occupations other than farming for their children is of notable interest.

The following is a breakdown of the responses.

TABLE 40

FARMERS' CHOICE OF OCCUPATION FOR[1] CHILDREN
N: 62

Occupations*	Male	Female	Both	Percentage
Farmer	8	2	10	16%
Medical field	5	3	8	13%
Teacher	3	1	4	6%
Own Choice	7	16	23	37%
Other**	6	3	9	15%
No Information	4	4	8	13%
Total	33	29	62	100%

* A number of the respondents gave more than one example of the kind of occupation they would like for their children. These included lawyer, minister, farmer (2), extension officer, teacher, doctor, mechanic, carpenter, typist, pilot, nurse (2).

** "Other" responses included: pilot, minister, priest, clerical (2), automotive engineer, undecided (2), fisherman, "not agricultural work."

One other background item is of interest. Children were asked what subjects they would like to study. In the

[1] K. Garvey et al., "Preliminary Findings," Table 19, Question 5.05, p. 21.

7 - 13 age group only 3 chose agriculture, and 18 chose general education. In the age group 14 to 26 twelve chose agriculture and 16 chose general education. In the age group 7 - 13 it is interesting that only 3 males chose agriculture and no females, while in the age group 14 - 26 eleven females and only 1 male chose agriculture.

TABLE 41

SUBJECTS CHILDREN WANT TO STUDY[1]
N: 58

Subject	7 - 13			14 - 26		
	Male	Female	Total	Male	Female	Total
General Education	11	7	18	11	5	16
Medical	-	-	0	-	3	3
Agriculture	3	-	3	1	11	12
Other	-	-	-	1	5	6
Total	14	7	21	13	24	37

In view of the role of hybrid maize in agriculture and agricultural education in Zambia, a number of questions were put to farmers in an effort to determine why they had or had not adopted hybrid maize.

For example, farmers were asked if they were using hybrid maize, and if so why. The use of hybrid or non-use

[1] K. Garvey et al., "Preliminary Findings," Table 68, Question B.6.11, p. 62.

is attributed by various authors to factors such as taste, ability to store well, increased yield, cost of seeds and fertilizers, availability, sale price, neighbors' use or non-use, education and income group. Factors such as cost, availability and sale price are covered in Chapter VII. Witchcraft and agricultural magic are two additional factors, the extent of which has not been extensively studied in Zambia.

Farmers were asked if they were using hybrid seed and if so or if not, what were the reasons. Out of 36 affirmative responses, 29 reported that the reason was "good yield." Out of 26 "no" responses, 10 said they did not have the funds for hybrid seed and 9 said it was not available. Thus, for a total of 19 out of 27 people who were not using hybrid seed, factors such as availability and finance influenced their use of the seed. The breakdown is as follows:

TABLE 42

FARMERS' USE OF HYBRID SEEDS AND REASONS[1]
N: 62

Responses	Male	Female	Both
Yes	17	19	36
No	16	10	26
Reasons for Growing*			
Good Yield & Grows Well	15	14	29
Good Flour	1	2	3
Reasons for Not Growing			
No Funds	8	2	10
Not Available**	7	3	10

* Note: Some people gave two or three reasons or other reasons which did not fit into the main categories. Some of these reasons include: good flour (2); resists pests; no one to help; stick to tradition; can't manage; thinks would be bewitched if prosperous; given seeds; told to use it; and tried and failed.

** Not available could mean either seeds, fertilizer or insecticide. Farmers mentioned mostly hybrid seed or one or all of the others.

[1]The table is compiled from the data gathered in the Mpika District. Questions A.1.20 and A.1.21.

Farmers were asked if they try hybrid seeds or new practices before their neighbors or after they see how the neighbors succeed with new seeds or practices. The purpose of the question was to determine if they were willing to try new things. The majority of the respondents, 80% of the male respondents and 85% of the female respondents, indicated that they try hybrid seeds and practices without waiting to see if their neighbors have succeeded. This may indicate that they are very receptive to new initiatives in the field of agriculture.

TABLE 43

FARMERS' INNOVATIVENESS[1]
N: 62

	Wait to See Neighbors' Results		Try First		Not Answered	
Male	6	17%*	28	80%	1	3%
Female	4	15%*	23	85%	-	-
Total Both	10		51		1	2%

* Percentages are based on the total number of female respondents and the total number of male respondents.

Farmers were asked if they were afraid to grow more maize than their neighbors. Extension staff were also

[1] K. Garvey et al., "Preliminary Findings," Table 18, Question A.1.23, p. 21.

asked if they thought farmers might be afraid to grow more than their neighbors. In addition to this question, we asked people outside the structured interview situation the amount of influence they thought belief in witchcraft had on farmers. We did not ask any questions about agricultural magic,[1] which for the purposes of this study refers to the negative practice of bewitching someone who has stood out in the community by, for example, growing larger amounts of maize than anyone else. To our general question about the amount of belief which still exists, the responses we got ranged from 25% in the urban areas to 75% in the remote rural areas.

The results of the question on the fear of growing more maize than one's neighbors is as follows:

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[1] Farmers were asked one question about success in growing maize. Some farmers were asked the question in an open-ended fashion and others were asked to answer yes or no. "Medicine" was one of the components and 3 answered "yes," that success in growing maize depended on it. See page 179 and Table 48 below.

TABLE 44

PREVALENCE OF FEAR AMONG FARMERS OF GROWING MORE MAIZE THAN ONE'S NEIGHBORS[1]
Farmers N: 62
Extension Staff N: 47

	Farmers			Extension Staff		
	Yes*	No	No Response	Yes**	No	No Response
Male	5	27	1	10	24	5
Female	1	28	-	1	7	0
Total	6	55	1	11	31	5
Percent of Total	10%	89%	1%	23%	66%	11%

* "Fear of being bewitched" was the reason given by all the farmers who replied yes to this question.

** "Fear of being bewitched" was the reason given by 8 extension staff who answered yes. Two gave other reasons.

In the context of planning long and short range agricultural development, it is essential to know how long it takes for a subsistence farmer to adopt a new crop. Agricultural education can then be tailored to the long or short range plans. It is very interesting to note from the table below that most extension staff believe that it takes between 1 and 2 years for subsistence farmers to adopt hybrid maize. This is very encouraging.

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[1] K. Garvey et al., "Preliminary Findings," Tables 56 and 57, Questions A.1.22; C.7.23, 7.24 and D.12.21, p. 52.

TABLE 45

TIME IT TAKES SUBSISTENCE FARMERS TO ADOPT[1] HYBRID MAIZE
N: 48

Length of Time	Extension and Training Officers*	
One year or less	14	29%
Over one year and up to two years	15	31%
Over two and up to three years	7	15%
Over three years	3	6%
Not answered	9	19%
Totals	48	100%

* Note: One extension officer gave two responses which are recorded in the table. Usually one of the responses would have been dropped. His answers were, "Forced, one year" and "Not forced, 3 years."

Two additional questions would have been useful, namely, for farmers, "When did you first hear about hybrid maize and when did you adopt it?"; for extension staff, "What methods of agricultural education would you recommend to ensure adoption within a one or two year period?"

Before discussing with farmers the type of or content of education they needed or the methods of learning they preferred, it was necessary to ask what type of

[1] K. Garvey et al., "Preliminary Findings," Table 54, Questions C.7.21, D.12.19, p. 51.

education they had already received.

In Table 46 below we see that the Agricultural Assistants were the main sources of advice. We had been advised not to separate the question between Agricultural Assistant and Commodity Demonstrator (CD) because farmers would not really be able to distinguish between the two. We decided to try anyway in view of the fact that there were only one CD interviewed who actually worked in one of the three Agricultural Camps visited. We thought it useful to try to have farmers make the distinction because the CD's usually have only a short introductory course before being assigned to an agricultural camp. It would appear from the results that the farmers do and can make a distinction. It would seem to be easy since it is likely that the farmers know much more about agriculture than do the CD's.

In keeping with Government policy, it is interesting to see that 23 farmers reported receiving advice on hybrid maize. There were only two other significant types of advice given by extension staff: (i) "grow more"; 18 farmers reported receiving it from AA's or CD's; and (ii) "general extension"; 24 farmers reported receiving it from either AA's or CD's.

With respect to "number of times" the advice regarding "hybrid maize" received the most responses. Sixteen farmers reported they had received this advice more

TABLE 46

SOURCE, LOCATION, TIMING, TYPE AND YEARS FARMERS RECEIVED AGRICULTURAL EDUCATION[1]

N: 55

	Source of Advice		Location Advice Received					Number of Times					Years No. of People Who Received Assistance		
	Agric. Assts.	Comm. Demonstr.	FI/FTC	Farm	Home	Agr. Camp	Village	Several Times	Once	Twice	Three Times	4 - 5 Times	Year not Spec. Prob. 1978 or 1979	1960 - 1972	1973 - 1977
Hybrid Maize	19	4	8	15	4	0	1	8	3	3	1	4	28	1	2
Maize	6	1	2	7	3	4	0	4	0	2	2	1	9	0	0
Sunflower	3	1	1	2	0	2	0	2	1	2	0	0	5	0	0
Soyabeans	3	1	4	1	0	3	0	1	3	1	0	0	6	0	2
Tobacco	1	0	3	0	0	0	0	0	0	0	0	0	1	0	2
Cotton	2	1	3	0	1	3	0	1	0	2	0	0	5	2	0
Cassava	3	0	4	2	1	1	0	0	0	4	0	0	5	0	2
Rice	3	1	5	1	1	3	0	1	2	1	0	0	6	2	0
Millet	2	0	3	2	1	3	0	3	0	0	0	0	6	2	0
Sorghum	1	0	2	2	1	1	0	1	0	0	0	0	1	2	0
Groundnuts	5	0	5	2	2	3	0	4	0	4	0	0	4	3	0
Beans	7	0	6	3	2	3	0	3	2	2	0	0	11	0	2
Sweet potato	4	0	2	4	2	0	0	4	2	0	0	0	6	0	0
Irish potato	4	0	3	3	0	2	1	1	1	1	1	1	4	0	0
Vegetables (rape, tomato, onions, cabb.)	12	1	7	8	4	4	0	6	1	0	0	2	20	0	0
How to get credit/loans	6	0	3	2	1	1	1	1	1	2	0	0	6	0	0
Advice about marketing	4	0	3	3	0	2	0	0	1	2	0	0	7	0	0
Advice about seeds, fertil. & insecticides	11	1	6	8	0	2	0	4	2	4	0	0	17	0	2
Advice about storage	6	3	2	5	2	1	0	4	0	3	0	0	11	0	0
Advice about management/planning	4	0	2	1	0	1	0	0	0	2	0	0	4	0	0
Home economics (child care, nutrition)	No one received any advice on this from AAs or CDs.														

TABLE 46 (Cont.)

	Source of Advice		Location Advice Received					Number of Times					Years No. of People Who Received Assistance		
	Agric. Assts.	Comm. Demonstr.	FI/FTC	Farm	Home	Agr. Camp	Village	Several Times	Once	Twice	Three Times	4 - 5 Times	Year not spec. Prob. 1978 or 1979	1960 - 1972	1973 - 1977
Health care	12 at clinic and church 2 health inspector 1 radio							15					15		
Advice to grow more	15	3 (2 at pol. meeting)		7	6	1	3	5	2	0	0	4	18	0	0
Advice on alternative crops to grow	7	1		4	5	2	2	1	4	0	0	0	0	10	0	0
Citrus fruit	8	2		8	2	3	2	2	4	2	2	0	1	15	1	0
Bananas	2	0		6	2	1	1	0	3	0	1	0	0	7	0	1
Cattle (raising, dipping, vaccinating)	2	0		1	0	2	0	1	3	0	0	0	1	4	0	0
Oxen	3	1		0	1	1	0	1	0	1	0	0	1	4	0	0
Dairy	1	0		1	1	1	0	0	0	0	1	0	0	1	0	0
Pigs	1	0		1	1	1	0	0	0	0	1	0	0	1	0	0
Goats	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
Poultry	5	0		4	3	4	0	0	4	0	1	0	1	8	0	0
Gen. Ext. advice (lima, ploughing, planting, harvesting techniques)	20	4		2	12	5	1	2	3	5	0	0	3	15	0	2
Advice on Government Agric. policy	4	1		3	3	2	5	1	2	1	2	0	0	7	0	0
Help with questions and problems	4	1		1	3	5*										

* Only one was by AA, the rest by relatives/friends.

[1] K. Garvey et al., "Preliminary Findings," Table 63, Question 2.01, pp. 57 and 58.

then once, and three reported they had received advice only once.

Farmers were asked the actual year in which they received advice or assistance. The question was supposed to cover 1979 only. The nature of the interview process made it impossible to stick to 1979. Most of the interviews were carried out like conversations. At times the farmers talked at length about what most concerned them, and it was impossible to interrupt without breaking the rapport. With respect to dates, some farmers pointed out that they had had no advice since independence or since they had moved from wherever they had lived before. By using some other event they pinpointed the year they received advice. One other problem arose with this part of the question: we were asking about calendar years, and it is likely that the farmers were thinking we meant crop or agricultural years--from planting to harvesting. As a result, the above table shows the years ranging from 1960 through 1979.

Table 47 below shows the crops which farmers are raising or would like to raise and the knowledge which they want with respect to them, as well as poultry. Sunflower was the most popular choice. No one was growing it, but 29 farmers wanted to grow it, and most of them indicated that they wanted to grow it for cash. Poultry was kept by four who answered this part of the question and 22 indicated

TABLE 47

ADVICE OR ASSISTANCE FARMERS WOULD LIKE FOR SELECTED CROPS[1]

N: 62	Growing	Would like to grow	Growing	Would like to grow	Would like to grow	Growing	Would like to grow	Growing	Would like to grow	Keeping	Would like to keep
	Maize		Hybrid Maize		Sunflower	Vegetables		Citrus		Poultry	
No. of Respondents	16	1	15	10	29	10	18	7	18	4	22
Knowledge											
How and when to plant, rotate and fertilize	3	1	3	4	18	-	6	-	6	-	-
How to identify pests and diseases	2	1	5	2	7	4	8	-	6	3	11
How to plough with oxen	0	1	0	0	0	-	1	-	2	-	-
How to irrigate	0	-	0	0	-	-	1	-	4	-	-
Farm planning & management	0	-	0	0	2	-	3	-	3	1	6
Techniques & Skills											
Recommended rotation, fertilization & planting	1	1	3	6	15	1	8	-	6	-	-
Ploughing techniques	-	-	2	1	4	-	2	-	-	-	-
Use of pesticides and herbicides, storage	3	1	4	2	11	4	10	-	6	1	0

TABLE 47 (Cont.)

N: 62	Growing	Would like to grow	Growing	Would like to grow	Would like to grow	Growing	Would like to grow	Growing	Would like to grow	Keeping	Would like to keep
	Maize		Hybrid Maize		Sunflower	Vegetables		Citrus		Poultry	
Inputs											
Hybrid seeds and plants	-	-	1	5	4	1	9	-	3	-	-
Fertilizer	1	1	2	5	8	3	2	-	5	-	-
Insecticides/herbicides	3	1	4	6	6	3	3	-	7	-	-
Marketing facilities	0	-	3	1	3	-	2	1	2	1	3
Land	-	-	0	1	3	-	-	-	1	-	1
Loans	-	-	1	0	1	-	-	-	-	-	2
Plough	-	-	1	0	0	-	-	-	-	-	-
Labor	-	-	1	0	1	-	1	-	1	-	-
Feeds	-	-	-	-	-	-	-	-	-	3	14
Vaccines	-	-	-	-	-	-	-	-	-	-	5
Keeping poultry	-	-	-	-	-	-	-	-	-	4	13

TABLE 47 (Cont.)

N: 62	Growing	Would like to grow	Growing	Would like to grow	Would like to grow	Growing	Would like to grow	Growing	Would like to grow	Keeping	Would like to keep
	Maize		Hybrid Maize		Sunflower	Vegetables		Citrus		Poultry	
Uses											
Cash	7	1	10	10	22	4	12	1	9	3	15
Food	5	1	12	8	10	2	8	-	12	5	12
Gain improved farmer status	0	-	1	0	0	-	-	-	-	-	-
Barter	0	-	1	0	1	-	1	-	-	-	2

[1]K. Garvey et al., "Preliminary Findings," Table 39, Question 6.14, p. 31.

that they would like to keep poultry. It is quite possible that the respondents were thinking of hybrid poultry, as 14 of them indicated that they needed feed. Poultry feed for hybrid poultry was rarely available even in the capital Lusaka. Nevertheless, farmers were almost evenly divided in their desires for the use of the poultry: 15 wanted them for cash, and 12 wanted them for food. Throughout the period we talked to farmers, we heard almost continuously that their village chickens were few because some mysterious disease which wiped them out. There was also some type of rodent or predator which ate them. These problems would explain why a total of 14 farmers indicated that they wanted to learn how to identify pests and diseases.

The high number of those who would like to grow vegetables is explained by the numbers who want them for cash, 16, and for food, 10. While in the Mpika District, we saw only one fresh produce market which is in Mpika itself. It appeared to be well stocked or "saturated," which was how it was described by several sources. It is unfortunate if the subsistence farmers interviewed are hoping to start growing vegetables for a market which can not absorb their produce. Farmers indicated very clearly the content of education which they required, particularly in the case of vegetables. Fourteen of those growing or who wanted to grow them indicated that they wanted to know how to use pesticides and herbicides and correct techniques

for storage. Nine of those who were growing or would like to grow indicated that they needed to know the recommended rotation, fertilization and planting techniques. Twelve of those growing or wanting to grow indicated the need to be able to identify pests and diseases.

There were no questions specifically designed to test the knowledge of the farmers with respect to crops, etc. It was not the purpose of this study to ascertain what the farmers had in fact retained from the various sources of education. One question, in fact, came close to testing knowledge. It must be stressed, however, that it was not designed to test knowledge. The purpose of the question was to ascertain the extent of the belief by the farmers in good fortune or medicine as it influenced success with hybrid maize.

Extension personnel were asked to answer the question "from the point of view of the subsistence farmers." The responses of the extension staff are much more consistent because the question was asked in a closed fashion. Specifically, each category was mentioned and the extension staff either said "yes" or "no."

However, the question was addressed to the farmers in a much less co-ordinated fashion. Some of the farmers were asked the question in an open fashion, i.e., "To what do you attribute success in growing maize?", while others were asked category by category.

TABLE 48

ON WHAT DOES SUCCESS IN GROWING MAIZE DEPEND?[1]
Farmers N: 62
Extension N: 47

	Farmers			Extension Staff		
	Yes	No	Not Asked or Suggested	Yes	No	Not Asked or Suggested
Planting-timing	41	1	20	21	0	15
Hybrid Seed	13	9	40	12	4	20
Ridging	7	11	44	7	10	19
Hard Work	34	1	27	16	0	20
Fertilizer	46	2	14	25	0	11
Money	3	14	45	8	8	20
Medicine	3	18	41	0	16	20
Pesticides	21	8	33	11	5	20
Good Fortune	3	13	46	5	11	20
Spacing	28	2	32	16	1	19
Other (specify)	4	-	42	2	-	31
Weeding	14	-	-	3	-	-
Water	4	-	-	-	-	-

[1]K. Garvey et al., "Preliminary Findings," Table 62, Questions A.5.12; C.11.05; D.16.05; p. 56.

The quality of the results is therefore uneven. However, a number of useful points and comparisons can be made: "Good fortune" and "medicine" simply did not show up as important either to farmers or from the point of view of extension about farmers.

The majority of farmers and extension staff responses of their opinions about farmers coincide closely on four of the categories of "success." These include "planting timing; fertilizer; hybrid seed and spacing." One category where the views differ is money and another is "hard work." The farmers, 34, felt "hard work" was important, while 16 extension staff felt farmers would feel that was an important ingredient to success. Three farmers felt "money" was important, while 11 extension staff felt farmers would feel "money" was important for success.

Methods of education are alluded to in a number of ways throughout this study. One of the most evident is the summary of educational methods, etc., which helped or did not help farmers in 1979 or if available would help. See Table 49, page 181 of this chapter. Farmers found Demonstrations the most helpful in 1979 and, following these, Farm Institute or Farmer Training Center Programs. The most significant response to the portion of this question "If available would help a lot" was "Community Development programs."

TABLE 49

ASSESSMENT BY FARMERS AND EXTENSION STAFF OF VARIOUS METHODS USED IN AGRICULTURAL EDUCATION[1]
Farmer N: 62
Extension N: 54

	Popular Theater		Discussion Between Two People		Lecture		Demonstration		Radio		Group Discussion		Farm Institute/ Farmer Training Center		Film Slides		Reading Materials Bembá	
	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F
Description of Efficiency																		
Very useful	3		25	31	14	16	49	44	17	18	42	40	33		17	13	23	12
Useful	5		21	14	23	25	2	12	17	17	9	8	13		16	18	11	25
Not very useful	-		4	9	8	11	0	-	16	12	0	7	2		8	16	12	6
Useless	1		1	3	4	4	0	-	1	4	0	2	6		2	7	1	4
No. of Respondents	9	-	51	57	49	56	51	56	51	51	51	57	54		43	54	47	47
Reasons Given by all respondents for usefulness or lack of usefulness of Methods*																		
More flexible, relaxed	1	-	6	17	0	1	0	2	1	2	2	17	0		2	2	3	3
Students retain more	-	-	0	-	0	-	0	-	0	-	0	-	0		0	-	-	-
Stiff, uncomfortable	-	-	3	3	14	8	0	-	5	7	11	3	0		0	4	-	4
Supplements other education	-	-	6	19	4	24	0	4	2	22	5	25	0		12	15	2	24
Reinforces other education	-	-	0	-	0	1	1	-	1	-	0	-	0		3	-	-	-
Practical share exchange ideas	-	-	4	3	0	-	29	53	0	1	5	-	0		0	4	-	1
See with own eyes	-	-	0	-	0	-	0	-	0	-	0	-	0		6	-	-	-
Hearing only, easily forgotten	-	-	1	1	1	-	0	-	4	3	0	5	0		0	17	-	1
No one to ask questions of	-	-	0	-	0	-	0	-	0	-	0	-	0		0		-	-

* In some cases more than one reason may have been given for the usefulness or lack of usefulness of the methods of education.

KEY: E = Extension; F = Farmer; Numbers = Number of people responding to each.

[1] K. Garvey et al., "Preliminary Findings," Table 21, Questions A.2.04; C.8.04; D.13.01; and E.17.21, pp. 23 and 24.

Farmers and extension staff were asked their opinion about different methods of agricultural education. The responses are all very similar in a numerical sense, particularly with respect to the category "very useful." Demonstrations and "Group discussion" are the most popular with both extension and farmers. The fact that only 12 farmers characterize reading materials in Bemba as "very useful" may indicate that the farmers don't have any materials or they can't read them. By contrast, 20 extension staff members indicated that such reading materials were "very useful." There was a similar gap between extension and farmers in evaluating "discussion between two people" where 20 extension personnel found it "very useful" and 31 farmers found it "very useful." This difference may be due to extension staff's lack of experience with farmers or unsatisfactory or prejudicial experience with farmers. Quite a number of the extension staff interviewed have administrative positions and rarely come in contact with subsistence farmers. Alternatively, extension staff may have found little satisfaction from person to person contact with farmers. Or perhaps they find because there are so many farmers, person to person contact takes up too much time.

Among the reasons given, farmers overwhelmingly indicated that "demonstrations" provide an opportunity for "practical sharing and exchanging ideas." Farmers firmly

indicated educational methods which "supplement other education." These include "reading materials in Bemba"; "group discussion"; "radio"; and "lecture."

Children were asked a similar question about educational methods. The question was not tied to agriculture though the children knew that the main concern of the interviewer was agriculture. The results were very similar to those of the adults and extension staff. One hundred percent of the younger children indicated that they learned from "demonstrations," and 98 percent of the older children indicated they preferred "demonstrations." "Learning by working or doing" was the next popular choice of the children with the younger age group, 97% indicating their choice and 100% of the older children who responded indicating that it was their choice.

The findings indicate that all groups consulted agree that "demonstrations" are the best method for learning. This should be taken into account by the extension service and those planning the programs for the Farm Institutes and Farmer training centers.

Observations and Findings

Educational methods. Agricultural Assistants should be provided with the resources necessary to develop and carry out effective demonstrations. Specifically, each AA should have available a small budget for purchase of inputs for

TABLE 50

EDUCATIONAL METHODS PREFERRED BY CHILDREN[1]

	Age Groups of Children									
	7 - 13				% Yes		14 - 26			
	Number Replying	Yes	No	No Inf.	7-13 Yrs % N: 31	14-26 Yrs % N: 49	Number Replying	Yes	No	No Inf.
Asking questions and hearing the answers	28	25	3	3	89%	67%	49	33	16	0
Having the teacher lecture to the class	28	24	4	3	86%	74%	49	36	13	0
Listening to the radio Bemba/English	25	13	12	6	52%	83%	48	40	8	1
Reading materials Bemba/English	28	16	12	3	57%	72%	46	33	13	3
Looking at pictures	22	15	7	9	68%	71%	45	32	13	4
Watching films or slides Bemba/English	25	18	7	6	72%	72%	46	33	13	3
Learning by working or doing	29	28	1	2	97%	100%	48	48	0	1
Demonstration	29	29	0	2	100%	98%	48	47	1	1
Group discussions	29	25	4	4	86%	85%	41	35	6	5

[1]K. Garvey et al., "Preliminary Findings," Table 39, Question B.6.14, p. 31.

demonstrations. These demonstrations should be mandatory for each village or group of villages which are close to each other. A farmer in each village might be chosen or a volunteer solicited to actually carry out the demonstration over the period of the crop year. He or she could do this under the direction of the AA. As it is now, there is no money for inputs for AAs. They are expected to carry out demonstrations by selecting prosperous farmers to carry them out or alternatively the AA carries the whole exercise out at his camp headquarters--his home.

If farm Institutes and farmer training centers do not have the resources to maintain effective demonstration plots, nearby farmers can be asked to maintain the demonstration plots. This may even make the demonstrations more credible if local farmers like themselves are participating in the demonstrations.

Educational materials should be made available, particularly where there is a shortage of personnel. If an agricultural assistant is only able to visit distant villages once a year, for example, handouts with illustrations for step by step implementation of the Lima Program could be made widely available.

Radio Farm Forum with illustrated discussion materials should be made a reality. There were no radio

forum booklets[1] visible in the Northern Province either in Mpika District or in the Provincial headquarters, at Kasama.

Radios should be made available for the radio farm forum programs. All the broken radios presently stored in Kasama should be fixed and a permanent arrangement for a traveling repair service should be instituted. Batteries should also be available free to those who maintain the radios and lead the discussions.

Farm Institute and Farmer Training Center staff should have adult education methods training refresher courses once a year. The use of the lecture method should be carefully reviewed.

Popular Theatre should become a permanent technique for use in the villages for identification and finding solutions for agricultural problems. It should also be reviewed for use in the Farm Institutes and Farmer Training Centers.

The training and visit system as an educational method should be used wherever practical. A system for followup visits to Farm Institute or Farmer Training Center trainees must be mandatory. If resources will not permit every farmer to be visited, then a selected few from every

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[1]Radio farm forum booklets are used to supplement discussion at meetings convened in villages to listen to agricultural radio programs.

group should be visited and the results incorporated in evaluations of the effectiveness of the training programs.

Based on indications by farmers that they have helped in the past with agriculture, the following kinds of persons from the community should be included in Farm Institute or Farmer Training Center programs: local primary and secondary school personnel; mission and church personnel; party, village productivity committee and ward development committee members; cooperative personnel; Nambord personnel who sell inputs and implements at the depots; community development personnel; research station personnel from local sub-stations or stations. These types of people can also act as resource personnel by leading discussion groups, giving talks or contributing in followup efforts.

The effective use of films, slides and reading materials should be part of the adult education programs and all extension personnel should be taught how to use these types of media.

Educational content. Farmers clearly indicated that they wanted to learn how to grow sunflower. Other things which they wanted to learn included how to keep poultry and how to grow vegetables and citrus fruits. In each case they specified what types of knowledge, techniques and skills they felt they needed to know.

Farmers should have access not only to education about hybrid maize but to all the other things which they are already growing or would like to grow. The extension service could ensure that education about all the important crops, including staples such as cassava, millet and sorghum, is available to all farmers if they want it. This could be done at the Farm Institutes or Farmer Training Centers where admission could be on a first come, first serve basis.

C H A P T E R V I

LOGISTICAL AND ORGANIZATIONAL FACTORS AS THEY RELATE TO AGRICULTURAL EDUCATION

Introduction

This chapter is confined to both the overview and analysis of logistical and organizational issues as they relate to agricultural education. These issues include the following: vehicle availability; distance to be covered by extension staff; ratio of farmers to extension staff; availability of inputs; organizational issues related to Farm Institutes and Farmer Training Centers; lines of authority and organizational questions within the extension service. References are made to the Lima Programme and Operation Food Programme wherever applicable.

The data from the field research is presented, discussed and analyzed. Observations and findings are reported at the end of the chapter.

Objectives. The following specific objectives relating to logistical and organizational issues in agricultural education formed the basis for the literature review and data collection in this study.

- Determine what subsistence farmers feel are limitations on utilizing information they receive.
- Determine how learning and utilization of new techniques with respect to agricultural production is influenced by indicators such as frequency of contact, areas to be covered, transport, levels of administration. etc.

The work done in connection with this chapter makes it possible to identify a number of organizational and logistical factors related to agricultural education of subsistence farmers.

Discussion of the Data

Contact for the purposes of this section of the study refers to contact between farmers and extension staff and contact between farmers and extension staff of Farm Institutes and Farmer Training Centers.

Chapter VII, which concentrates on Government Policy and Finance, highlights two policy questions relevant here: the first is the question of the types of farmers to be reached and the second is the question how many of each type of farmer should be reached.

The following is a discussion of extension personnel responses to the question, "How many subsistence (emergent, commercial) farmers do you visit each month?" From Table 51, we note that extension headquarters recommends that 10% of all farmers be reached in each agricultural camp. It is also apparent that there is no clear

understanding among extension personnel as to the numbers of farmers to be reached. Further, while policy as stipulated in the development plans emphasizes concentration on emergent farmers, extension officers used different criteria to determine types of farmers to be reached, based primarily on the amount of land under cultivation. At the same time, the Lima Program and other similar ones appear to conflict with both the guidelines as understood by extension officers and development plan intentions. The Lima Program stipulates that all farmers should have at least one Lima or quarter of a hectare of land under cultivation. At the same time, the training and visit system is supposed to be in use. This system requires that all education efforts be followed up with systematic visits to the farmers at all stages of growing process. Finally, Operation Food Programme provides for the active but unpaid participation of party officials in agricultural education and innovation, requiring tremendous coordination.

The question of which policy to implement or to concentrate on with which types of farmers is primarily an organizational question and secondly an educational question. It is organizational in the sense that all the divergent and well intentioned policies have to be coordinated together. The problem is education in the sense that the extension officers and farmers have to understand what the policies are.

The actual types of farmers reached and the numbers of times contact is made with that type of farmer are listed below. The responses were from all types of extension officers from the Camp level to the headquarters level.

TABLE 51

EXTENSION CONTACT BY NUMBER AND TYPE OF FARMER ON A MONTHLY BASIS[1]
N: 39

Number of Farmers Contacted each Month	Types of Farmers		
	Subsistence	Emergent	Commercial
None	2	2	10
1 - 10	6	12	9
11 - 20	5	4	
21 - 50	2	2	
51 - 100	4	1	
101 - 400	3	2	
Total Extension responses	22	23	19

Extension officers at all levels of the extension service were asked how much time was spent talking to farmers on a daily basis. A number of the extension officers interviewed were primarily involved with administration, others were specialists in one crop. The basis

[1]Adapted from K. Garvey et al., "Preliminary Findings," Tables 23, 24, 25, Questions 7.14, 7.15, 7.16, p. 12.

for the question was the Marter and Honeybone assertion that extension officers spend approximately two hours per day talking to farmers.[1] From the responses below it is clear that the Marter and Honeybone assertion could have some truth to it. Fourteen extension officers estimated that they spend between one and five hours a day with farmers.

TABLE 52

EXTENSION TALKING TIME WITH FARMERS[2]
N: 39

Hours per Day	Extension Responses
1 - 5	16
6 - 10	3
Total	19

Perhaps the most severe restraint on extension staff education efforts is the distance to be traveled in order to reach the farmers. The following quote illustrates the problem:

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[1]David Honeybone and Alan Marter, An Evaluation Study of Zambia's Farm Institutes and Farmer Training Centers (Lusaka: Rural Development Studies Bureau, UNZA, 1975), p. 18.

[2]K. Garvey et al., "Preliminary Findings," Table 28, Question C.9.08, p. 14.

> Of the staff of three Agricultural Camps we visited, none had any transport (with the exception of a motorcycle without a battery and a bicycle without spart parts) and two had no shoes to speak of.[1]

At the Camp level it is inconceivable to expect extension staff to reach all the farmers on an individual basis.

> How does one Agricultural Assistant manage to cover all the other places as to have time to teach me?[2]
>
> Farmer

In order to interview farmers we walked with extension staff from 8 in the morning until 7 at night during our three weeks in the Mpika District. The furthest we walked was approximately 12 km in about 3 hours. Based on our limited experience, it is unreasonable to expect an Agricultural Assistant (AA) to walk 3 hours to and 3 hours from a village where a limited number of farmers could be reached in the remaining 2 hours of an 8 hour day. Assuming that he has a half-hour lunch break, the AA could conceivably, in the remaining one and a half hours, address a group meeting of farmers or talk to one or two individual farmers. Without incentives such as allowances for staying overnight, cycling allowance or footing (walking) allowance, it is not reasonable to expect extension staff to travel the distances beyond 12-15 kilometers.

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[1] Ibid., p. 11.

[2] Ibid., p. 11.

TABLE 53

DISTANCE TO FARMERS[1]
N: 39

Distance	Extension Responses	
	Average Distance to Nearest Farmers	Average Distance to Farthest Farmers
Up to 5 kilometers	11	
Over 5 kilometers and up to 13 kilometers	9	
From 7 to 50 kilometers		14
Over 50 kilometers and up to 350 kilometers		6
No response	19	19

This question was asked as two questions, i.e., nearest and farthest averages were asked separately. Thus, it is interesting to note that extension staff feel that farmers between 5 and 7 kilometers are either near or far depending on which extension staff one speaks to.

The extension staff at the District and Provincial headquarters levels have land rovers at their disposal--one at the District headquarters and four at the Provincial headquarters. Petrol or gasoline is provided on a monthly basis in limited quantities. When the staff stay overnight

[1]K. Garvey et al., "Preliminary Findings," adapted from Table 28, Questions C.9.09 and C.9.10, p. 14.

in the course of their visits in the Districts or for provincial officers throughout the province there is a reimbursement system for overnight allowances. For the days we spent in Kopa, for example, we were required to pay the driver a night allowance and overtime allowance. There were complaints that in general, for the District staff at least, their expenses, even when properly accounted for, were not reimbursed.

There are two points to note here. One is that there apparently is no system of incentives for the camp staff and yet there is a system of incentives for administrative staff at District and Provincial offices. Two, the system of incentives for the District, and possibly also for the Provincial, staff does not work. That is, the Government does not reimburse the staff. These problems at the camp, provincial and district levels cause resentment and dissatisfaction with headquarters administration. Most significantly, those people in direct contact with farmers are not encouraged by such inequity and mal-administration to walk extra miles or, if they have a bicycle, to cycle long distances. As a result, the farmers suffer. Finally, whether walking long distances or cycling, using footpaths is not pleasant in the dark. Throughout Zambia there are mambas and cobras and during the rainy season, one must be particularly careful. On some nights without flashlights it is impossible to even see the

path. Batteries are not available very often and flashlights are very rare. One other problem is wild animals, which are found throughout Zambia. They are not totally confined to Game Parks. At the Kopa Agricultural Camp, because of the presence of lions in the area, we tried not to travel on foot in the dark and worried about the Agricultural Assistant who had to walk for about thirty minutes to his home in the evenings after leaving us at the Primary School.

In an attempt to have extension staff and farmers identify the reasons why subsistence farmers are not visited often or regularly, we asked both farmers and staff the same question. Extension staff, almost unanimously (91%), felt transport was the major impeding factor. Only 35% of the farmers felt this was a strong reason. Farmers felt strongly that lack of interest in subsistence farmers (54%) and too many farmers and too few staff (57%) were the most significant reasons for lack of contact. On these same questions, only 5% of extension staff felt that lack of interest in subsistence farmers was a strong reason, while 80% felt that too many farmers and too few staff was a strong reason for lack of contact. Only one person, a farmer, said "they do visit."

It is interesting to note that only 23% of farmers and no extension staff felt strongly that a reason for lack of contact was that it is more important to spend time with

emergent farmers. However, 28% of extension staff and 19% of the farmers felt that it was a reason, though not a strong reason, and 42% of extension and 57% of farmers felt that it was possibly a reason. Since the policy as articulated in the Development Plan is supposed to be emphasis by extension staff on emergent farmers, these responses show perhaps a lack of knowledge of policy on the part of extension staff, or possibly unwillingness to say so since they knew that we were concentrating on traditional farmers. Most likely the problem is that extension staff are not sure how many of each type of farmer they are responsible for, as can be seen from responses to questions summarized in Table 77.

A related question was asked of extension personnel only. While the response rate was poor, the results do highlight the issues explained below.

In the literature reviewed for this study, there were a number of studies on Zambia and on theories of modernization which categorized farmers according to their interest or lack of interest in agricultural education. Criteria for these categorizations seemed highly subjective and were rejected for use in this study. Nevertheless, it is interesting to note that some extension personnel feel that lack of interest was a reason for non-participation by some of the farmers. It may be recalled that in Table 54 above, 37 farmers indicated that they thought that lack of

TABLE 54

REASONS FOR NOT VISITING SUBSISTENCE FARMERS[1]
Farmers N: 62*
Extension N: 28**

Reasons	Feel Strongly				Not strong but a Reason				Possibly a Reason				Not a Reason				No Response	
	E	%	F	%	E	%	F	%	E	%	F	%	E	%	F	%	E	F
Lack of knowledge relevant to subsistence farmers	1	6%	2	8%	7	41%	5	20%	4	24%	18	72%	5	29%	-	-	11	36
Too many farmers and too few staff	16	80%	20	57%	3	15%	6	17%	1	5%	9	26%	-	-	-	-	8	26
Lack of interest in subsistence farmers	1	6%	20	54%	4	22%	5	14%	6	33%	12	32%	7	39%	-	-	10	24
More important to spend time with emergent farmers	-	-	6	23%	4	29%	5	19%	6	43%	15	58%	4	29%	-	-	14	35
Lack of transport	22	92%	11	35%	2	8%	10	32%	-	-	8	26%	-	-	2	6%	4	30
Lack of implements/inputs	12	63%	4	16%	3	16%	3	12%	2	11%	18	72%	2	11%	-	-	9	36
Other (specify)																		
F's comments:*** lazy			5				-				2				-			
drunkards			-				-				1				-			
people don't listen; cost of fuel; roads; more money for AA's implements/inputs			4				-				-				-			
E's comments: bridges; distances; sickness; lack of subsistence payments	3				1				-				-					

* A total of 7 farmers out of 62 were not asked this question but are included in the column "no response." A total of 4 extension staff were not asked this question but are included in the column "no response."

** The number is 28 only because the responses from 11 additional questionnaires were not included due to time constraints.

*** One additional farmer said, "they do visit."

[1] K. Garvey et al., "Preliminary Findings," Questions C.9.26, A.3.03, Table 27, p. 39.

TABLE 55

REASONS WHY FARMERS AND THEIR WIVES DO NOT ATTEND FARM INSTITUTE OR FARMER TRAINING CENTER PROGRAMS, DEMONSTRATIONS, FIELD DAYS OR AGRICULTURAL SHOWS
N: 39

Reasons	Extension Personnel Responses			
	A Reason		Not a Reason	
	Husband/Wife		Husband/Wife	
Not interested	12	11	6	7
Not invited	14	10	7	10
Other duties (household, school, etc.)	3	13	7	4
Can't spare time from farm work	13	11	12	6
No transport	19	20	3	3
Other	9	9		

interest was either a strong or possibly a reason for lack of visits by extension personnel.

The strongest opinion I recalled expressed about farmers by extension staff was by one Agricultural Assistant who declared that the farmers in a particular village were always off tending their chitemene gardens and were not interested in extension advice. This particular village had a grinding mill for maize on its premises and maize visible all around it. Further, we had visited it on a Sunday and the Agricultural Assistant had declined to go with us. People throughout the village indicated that the Agricultural Assistant had never paid them a visit. This particular village was at least a three hour walk from the Agricultural Assistant's house but was also accessible by road. It must be noted, however, that that particular Agricultural Assistant had no bicycle.

The question was asked whether lack of attendance was due to not being invited because it was not clear how farmers were invited to the various programs; neither was it clear what criteria were used to choose farmers for programs such as the Farmer Institute and Farmer Training Center Programs. As a result of the research, it is clear that not everyone is invited on an equal basis to these types of programs.[1] It seems most likely that "real"

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[1]Note: "Women aren't invited"--Senior Extension Officer; "All we know is that only emergent farmers and

farmers as defined by extension personnel are probably those most often invited.

The response to other duties conforms with our experience with trying to interview farm women who were also wives. Three extension personnel felt for husbands other duties might be a reason; 13 thought it might be for married women farmers. We found with women there were a number of cases where their duty or duties intruded in the interview process. Whereas with men there were no interruptions nor question as to whether or not they could be interviewed. At times, the husbands gave us their views of the duties of women. The women quite often looked after children, peeled cassava, or pounded millet or cassava while being interviewed. Sometimes they even left in the midst of the interview to do these duties and we would have to follow them; sometimes they simply interrupted the interview for a few moments. In a number of cases, the wives had to consult the husbands before being interviewed and some would not answer certain questions without asking the husband what his answer would be.[1] In one case, a

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only husbands go. Ladies are not invited."--Farmer. "There were five farmers we talked to who said 'Only (Bashimafama) farmers go to Farmer Training Centers (F.T.C.). I am just a villager,' so there are special villagers who are recogniżed farmers, while others are just villagers and I think the 'farmers' have first priority for attendance at F.T.C. courses."--Research Assistant.

[1]"While we accept that traditions must be observed, we must also be aware and agree that not all traditions

woman refused to be interviewed because the husband was sick and she was unable to consult him. She actually let the interview begin but then became nervous and refused to continue. In the beginning of the field research, the team composed of two males refused to even try to interview women and they left it to my research assistant and myself. Having had these experiences, we concluded that it is virtually impossible, or unlikely, for women to receive any advice from an agricultural assistant if the AA is a male. Secondly, we concluded that a female participant was essential in a research team if women were to be interviewed.

Extension staff opinions were also divided almost evenly over the item "Can't spare time from farm work." Thirteen extension staff thought this might be a reason for husbands, and 12 thought that it was not a reason for husbands not to attend meetings. For wives it is interesting to note that 11 extension officers thought that it might be a reason for wives, but only 6 thought that it was not a reason.

The problem of transport received the most attention from extension as a possible reason for not attending meetings, with 19 indicating it applied to husbands and 20 to wives. At both the Mpika Farmer Training Center and Mungwi Farm Institute we found that virtually none of the

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are good and/or sensible!"--Research Assistant.

planned programs were taking place or were likely to take place. This was due in part to a shortage of vehicles, but mainly because funds, though budgeted for, had not been released for petrol, for food, or for maintenance of the facilities. In the case of Mungwi Farm Institute, the staff had begun taking the program to the villages rather than trying to bring the farmers to the Farm Institute. The Institute also had a water shortage, making it difficult to care for large groups. In the case of the Mpika Farmer Training Center, the staff were on duty day after day, apparently doing nothing. We stayed at the Training Center off and on for about two weeks, so the comment is verifiable for that period. When we asked one extension training officer why she could not organize programs in the villages nearby, she said she would have to ask the District Governor.

In order to assess the organizational efficiency and morale of the extension service, the staff were asked a number of questions with respect to lines of authority, length of time in their present position, educational background and aspirations. The following are the results of exploration of these and other related issues.

The farmer-staff ratio is too high. In Mpika District there are 23 extension staff. Of the 23, 18 work actively with farmers, including traditional farmers. Five have very little or no direct contact with subsistence

farmers. Those who are active are responsible for 12,000 farmers in over 300 villages, a ratio of 666 farmers per extension worker. The 14 Agricultural Camps in the District have one Agricultural Assistant each. There are no staff at all at Mupamadzi, Mabonga and Lufila.

All extension staff were asked how long they had held their present position. In the case of the students at the Zambia College of Agriculture, Mpika, they were asked how long they had worked as commodity demonstrators.

TABLE 56

LENGTH OF TIME IN PRESENT POSITION[1]
N: 46

	Male	Female	Totals
Less than 1 year	2	-	2
1 year to 1-1/2 years	3	1	4
Over 1-1/2 to 3 years	14	1	15
Over 3 years to 5 years	3	1	4
Over 5 to 12 years	7	-	7
13 - 22 years	3	1	4
Total			36

Forty percent of the extension staff have been in their present position from over 3 up to 22 years. Judging

[1] K. Garvey et al., "Preliminary Findings," Table 33, Questions E.17.05, C.7.05, p. 38.

from their responses to questions in general and their specific complaints about being tired of being posted in one place at one level for too long, suggests that this has a detrimental effect on the performance of these individuals in the extension service. Further, lack of movement would tend to discourage others from joining or staying in the extention service.

All extension staff interviewed were asked if they had written job descriptions. The purpose of this question was to ascertain the organizational efficiency of the extension service in general. We did not ask to see the job descriptions nor did we ask extension personnel to describe them, even though we did ask related questions about areas of responsibility, topics covered, etc. (see Table 58). Consistency in development and distribution of job descriptions might lead to a much clearer understanding on the part of the extension staff of such things as: definitions of farmers, numbers of farmers to be reached, when to use the training and visit system, and which policy package, i.e., Lima Program, etc., to use with which farmers or under what circumstances to use the Lima Program versus other extension techniques. The answers to the question were as follows:

TABLE 57

EXTENSION PERSONNEL WITH WRITTEN JOB DESCRIPTIONS[1]
N: 54

Male		Both No Answer	Female	
Yes	No		Yes	No
23	10	13[2]	6	2

It is notable that the following priorities conform closely to the major policy objectives as stated in the Development Plan (see Chapter VII). "Encouraging more production" was termed the first priority of the majority of the extension staff. From there in descending order were: "Identification of and finding solutions to farmers' problems"; "Helping farmers to find and use seeds, fertilizers and insecticides." "Hybrid maize" and "general extension work" ranked the same and "groundnuts" followed as fifth priority with "sunflower" and "weekly or monthly followup visits after a method is taught" close behind in

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[1] K. Garvey et al., "Preliminary Findings," Table 34, Questions C.7.07, E.17.06, D.12.09, p. 38.

[2] Nine out of 13 are students from the Zambia College of Agriculture, Mpika, who worked previously as CDs but will not actually have job descriptions until they receive their assignments as Agricultural Assistants. Figures were added here from questionnaires received after the presentation of the paper on "Preliminary Findings."

terms of numbers of responses.

The extension staff were also asked what could be useful but was not in the job descriptions. Rated first was the question as to "home economics, nutrition, etc." Fourteen people indicated that it could be useful. Eight indicated that it was in fact first priority and 17 indicated that it was the responsibility of another person or department. One other related item was helping the production of the traditional staples "Cassava," "Millet," "Sorghum." Between 17 and 20 staff indicated that this was part of the job but not a priority. These two issues of nutrition and traditional staples are of interest particularly for this province, where the soil requires quite a number of inputs including gypsum, which is not yet available, in order for hybrid maize to be grown successfully. At the same time, according to the Development Plans, better nutrition at the village level is a priority.

Extension personnel were also asked whether any of a variety of listed factors would help them to do their jobs better. They were asked to put such factors in priority order. "Transport" received the highest number of responses, 41, with 26 extension placing it in first priority. The second highest positive response was for "more staff." However, of the thirty-four who listed this, only 9 placed it as first priority, none placed it in second priority and 11 placed it in third priority. Only

TABLE 58

EXTENSION JOB DESCRIPTION RANKINGS[1]
N: 46

Type of Advice/ Assistance	First Prior.	Part of Job But Not Prior.	Not in Job Descr.		Responsibility of other Dept/ Person	Total N[+]
			Could be Useful	Not Useful		
Hybrid maize	32	5	3	-	2	42
Maize	8	23	2	3	2	38
Sunflower	30	5	2	-	2	39
Soyabeans	18	15	2	2	3	40
Tobacco	7	13	5	4	11	40
Cotton	16	13	3	2	2	36
Rice	16	15	4	-	4	39
Cassava	8	18	6	2	3	37
Millet	7	20	8	1	3	39
Sorghum	11	17	7	2	3	40
Groundnuts	31	5	1	-	2	39
Beans	28	6	3	-	1	38
Sweet potatoes	11	20	4	1	2	38
Irish potatoes	20	14	1	2	3	40
Vegetables (onions, tomato, rape, cabbage)	28	6	-	1	2	37
Identification/finding solutions to F problems	36	3	3	-	1	43

TABLE 58 (Cont.)

Type of Advice/ Assistance	First Prior.	Part of Job But Not Prior.	Not in Job Descr.		Responsibility of other Dept/ Person	Total N+
			Could be Useful	Not Useful		
Helping farmers to get credit/loans	14	15	4	-	12	45
Explain Govt. agr. policy to farmers	28	9	2	-	3	42
Helping farmers with marketing	12	16	6	-	12	46
Helping F to find/use seeds/ fertil./insectic.	34	5	-	-	1	40
Helping farmers with storage techniques	23	10	4	-	3	40
Farm management/planning techniques	28	7	1	-	4	40
Identifying leaders among farmers to help spreading of new techniques	20	10	3	-	7	40
Self-help housing techniques	3	6	11	1	21	42
Home economics (nutrition, etc.)	8	4	14	1	17	44
Health care/first aid	6	3	10	4	16	39
Encourage more production	37	4	1	-	1	43
Advice on alternative crops to try	28	7	2	-	3	40
Citrus trees	26	4	2	3	5	40
Bananas	25	6	2	2	5	40

TABLE 58 (Cont.)

Type of Advice/ Assistance	First Prior.	Part of Job But Not Prior.	Not in Job Descr. Could be Useful	Not in Job Descr. Not Useful	Responsibility of other Dept/ Person	Total N+
Cattle	15	13	4	1	7	40
Oxen for ploughing	13	11	5	1	4	34
Dairy cattle	13	16	3	2	6	40
Pigs	15	14	3	1	6	39
Goats	11	16	7	1	5	40
Poultry	23	10	1	1	4	39
General extension (ploughing, planting, harvesting techniques, e.g., Lima Program)	32	5	1	-	3	41
Teaching farmers a method and following up with weekly or monthly visits	30	4	2	-	4	40
Other*	9	-	1	-	-	10

* Includes wheat, coffee, data collection, rabbits, youth extension, and sheep.

+ Total N means the total number of replies to each question.

[1] K. Garvey et al., "Preliminary Findings," Table 65, Questions C.8.01, E.17.20, p. 60. Figures were added here from questionnaires received after the presentation of the paper on "Preliminary Findings."

27 people indicated that "more salary" would help them to do their job better, but it appeared that those who did say yes to this question also felt more strongly, as 13 indicated that it was a first priority, 3 indicated second priority, and 6 indicated third priority. The third highest response was to the items "clear policy guidelines." Thirty indicated yes, it would help, while only 3 said no; but only 5 indicated that it would be a first priority. This item was treated as a second priority by only 7 and a third priority by 8 persons. Nevertheless, since during the course of research for this study the lack of clear policy seemed to be evident, these answers would serve to substantiate it as a genuine problem.

Agricultural production in the Northern Province is very labor intensive. Virtually all work is done by hand with a hoe. Large portions of the Northern Province are infested with the Tsetse fly, making it impossible to keep oxen for plowing. It is not the tradition of the people in the Province or Mpika District in particular to keep cattle. A tractor is available for hire to farmers with enough land to plow in the Chalwe Camp area and the Mpika Main Camp area.

Questions about labor were asked because the availability and ability of farmers to hire labor is thought to influence whether a farmer is willing to try a new crop like Hybrid maize. It was thought that this

TABLE 59

EXTENSION STAFF JOB NEEDS AND PRIORITIES[1]
N: 47

Reason	Yes	No	Priority 1st	Priority 2nd	Priority 3rd & 4th	Total Responses
Better housing	22	9	5	5	-	31
Transport	41	0	26	6	4	41
More salary	27	1	13	3	6	28
Job description	22	4	4	4	6	26
Clear policy guidelines	30	3	5	7	8	33
Clean water	22	6	3	2	5	28
Electricity	10	16	1	2	1	26
More staff (specify)	34	2	9	-	11	36
Demonstration/Office equipment	26	5	6	1	6	31
Schools for children	22	5	5	3	5	27
Other	6		2	2	1	6

[1] K. Garvey et al., "Preliminary Findings," Table 66, Questions C.9.27, D.14.11, p. 62. Figures were added here from questionnaires received after the presentation of the paper on "Preliminary Findings."

question might be even more important in this area, where the tradition of keeping chitemene gardens was still alive.[1] The chitemene garden requires much less work than a field crop plot.

Forty-seven percent of the farmers interviewed in the course of the study are 50 years of age or older. In most cases their children who might have provided labor are grown and have their own farms to care for. See Table 23 above for details as to the use of hired labor by the farmers interviewed. Twenty-three farmers said they used hired labor for stumping and 16 said they used it for planting. It is difficult to imagine that farmers, particularly older farmers, would be willing or able to expand or experiment with new crops without additional labor.

Out of 37 extension staff responding, 22 felt that labor supply did not influence farmers' decisions whether to adopt new policies. Fourteen felt that labor supply did have an influence, and one didn't know.

The following table gives extension staff responses to questions about labor.

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[1] "Paramount Chief Chitimukulu has banned citimene in the Northern Province, and anybody found practicing the tradition will be dealt with"--Zambia Broadcasting Service, "News from the Districts," week of 1 December 1981.

TABLE 60

RANKED NEEDS OF FARMERS AND EXTENSION: VIEWS RANKED ON THE NEEDS OF FARMERS[1]
Farmers N: 62
Extension N: 47

Needs	Most Imp.		Somewhat Imp.		Not Very Imp.		Total Respondents		No Response	
	F	E	F	E	F	E	F	E	F	E
Credit/AFC loan	23	21	10	11	15	8	48	40	14	6
Fertilizer/seed/insecticide	33	32	10	6	5	2	48	40	14	6
Marketing facilities	26	29	13	6	3	4	42	39	20	7
Extension services/advice	27	40	15	1	4	-	46	41	16	5
F.I./F.T.C.	14	25	15	8	11	1	40	34	22	4
Better prices	34	26	7	8	5	5	46	39	16	7
Other: business activity, transport, land	17	8	-	-	-	-	17	8	55	41

[1]K. Garvey et al., "Preliminary Findings," Table 48, Questions C.10.03; D.15.03 and A.4.03, p. 46. The responses above include data from questionnaires received after the presentation of the "Preliminary Findings."

TABLE 61

EXTENSION STAFF VIEWS ON LABOR

Questions	Yes	No	Don't Know	No. of Respondents
Labor supply influence on adoption of new policies?	14	22	1	37
Is labor available?	23	5	-	28
Is there a seasonal labor shortage?	18	8	-	26
Does the extension service provide advice on labor problems?	22	6	1	29

Availability of inputs are also thought to influence whether or not a farmer will try a new crop such as Hybrid maize. It is simply logical that if inputs are not available farmers cannot grow the recommended crop. One of the references to the problem of inputs with respect to the group of farmers interviewed is as follows: when farmers were asked to rank their needs, 33 out of 48 respondents indicated that fertilizers, seeds and insecticides were most important, while 10 felt they were somewhat important.

Extension staff were asked a number of questions which had two basic aims. One was to see if lines of authority were clear to staff members, and the second was to see how much agreement there was on who decides the work

program of Camp staff.

The differences in responses to the two related questions were very interesting. Seventeen extension officers indicated that they had two or more supervisors. Only nine identified two or more people to whom they have to report. Trying to please more than one boss is difficult under any circumstances. The results of these two questions were as follows (Tables 62 and 63):

TABLE 62

NUMBER OF SUPERVISORS FOR EACH RESPONDENT[1]

	One	Two	Three	Five	No Answer
Extension Personnel	13	12	4	1	10

The flexibility and discretion of the Camp staff who actually deal directly with subsistence farmers was the underlying concern of two questions regarding the program of work and the daily work plan of camp staff.

The question "Who decides the programs of Camp staff?" has an implicit association with policy. This possible interpretation of the question would account for the responses, of which 5 respondents left the responsibility of decisions to the camp staff, agricultural assistants and the rest of the respondents placed the

[1]Data compiled from responses to Question E.9.11.

TABLE 63

OFFICERS TO WHOM EXTENSION PERSONNEL REPORT DIRECTLY[1]

	Extension Personnel Responses
Headquarters staff*	8
Provincial Agricultural Officer (PAO)	6
Reports to both PAO and others	2
District Agricultural Officer (DAO)	6
Reports to both DAO and PAO	3
Reports to DAO and others	3
Senior Agricultural Assistant	2
Agricultural Assistant (AA)	1
Reports to all DAO, PAO, AA	1
Permanent Secretary	1
No response	7
Total	40

* Headquarters staff did not specify to whom they report.

responsibility at District, Provincial or headquarters offices. On the question "Who decides the daily work plan of camp staff?" 14 respondents left the decisions to camp staff, while nine indicated others outside of the camps. In both responses, three in each indicated self as the decision maker. They have not been counted as Camp staff in the above discussion.

Both these results illustrate top down decision making in different degrees. They may also indicate a lack of confidence in the professional competence of camp staff. Given the shortage of transport, one wonders how

[1]Data compiled from responses to Question E.9.12.

the "bosses" communicate with the Camp staff. There were two qualified answers where DAOs and Camp staff were responsible. But one response noted that they meet every two months and the other advised that they met once a month.

TABLE 64

WHO DECIDES THE PROGRAM OF CAMP STAFF[1]

TA	AA	Self	DAO	PAO	HQ	No Response
1	5	3*	11**	6***	2	12****

* One person said plus district staff.

** DAO meeting every two months with camp staff; DAOs and AAs meet monthly.

*** One person said it is developed in consultation with women, AAs and district staff.

**** One person said the members of the young farmers clubs decide the programs.

TABLE 65

WHO DECIDES THE DAILY WORK PLAN OF CAMP STAFF[2]

TA	AA	Self	CD	AAs and CDs	DAO	No Response
1	10	3	2	2	5	17*

* One person said the subjects come from radio programs.

[1]Data compiled from responses to Question E.9.14.

[2]Data compiled from responses to Question E.9.15.

Observations and Findings

There should be clarification as to what types of farmers are to be reached by extension staff and how many of each type. This would make the work of the extension staff more goal-oriented and clear. The farmers would then have a clearer understanding of the role of extension staff. There would possibly be less grounds for disparaging remarks on both sides.

The Lima Program and Project: Operation Food Production should be eliminated as political slogans and the goals and objectives of both programs should be reflected in the job descriptions of all concerned. It would be sad, for example, if the Lima Program is translated as a "Lima sized," maize growing campaign in the Northern Province where maize is not a suitable crop.

The reality of a shortage of extension staff should be faced squarely. It is not realistic, for example, to require an agricultural assistant to implement the training and visit system when his farmers are scattered throughout a 50-kilometer radius. The training and visit system might be useful for most densely populated areas, but it is not realistic if the Agricultural Assistant has no transport or farmers are miles away on footpaths. Where there is a shortage of extension staff, the agricultural assistants should design work programs which allow them to maximize

their presence. For example, demonstrations or field days might have target numbers per month.

It might be useful for the extension service to define the distance they actually expect agricultural assistants to travel by foot, on bicycles, buses or by hitching rides. Extension personnel might be given quotas on a yearly basis for reaching all their villages at least once, for example.

Incentives, such as allowances for staying overnight, cycling and footing allowance should be made available for camp staff. If a priority is possible, district and provincial staff should have their incentives reduced in favor of the camp staff.

Bicycles and motor scooters should be part of the equipment of the camp staff, just as landrovers are part of the equipment of the District and provincial offices. Gum boots and flashlights should also be part of the equipment of the camp staff, and all should be available through loans.

The Farm Institutes and Farmer Training Centers should be functioning at 100 percent capacity, or a minimum of 75%, or they should be turned into multidisciplinary educational centers. If funds are not available for recurrent expenses, donor countries should be asked to provide administrative assistance on a trial basis.

Those extension officials who have been in the same positions for 5 - 22 years cannot be expected to have high

morale. These cases should be investigated, along with the procedures used by the extension service for firing inefficient staff and promotion and rotation of competent staff.

For the Mpika District, staff should be appointed for the camps at Mupamadzi, Mabonga and Lufila, and two new camps should be created at Mbata and Kambinga.

All extension staff should have job descriptions which cover such items as types of farmers and numbers of each type the extension personnel are expected to reach.

While a number of staff cited nutrition as already being in their job descriptions, quite a few cited it as something which should be in their job descriptions. It should be in all extension staff's job descriptions.

Transport should be available to all camp staff at the expense, if necessary, of the District and Provincial staff. The specialist staff who are based in the District and Provincial offices should be redeployed to the camps and from there they should be rotated systematically to ensure that they have an opportunity to reach all farmers.

Agricultural Camps should be renamed. The term Camp has a connotation of roughness and impermanency. The camps should also receive a new emphasis and revitalization. In practice and in terms of financial support, they should be the centers of agricultural activity.

C H A P T E R V I I

GOVERNMENT POLICY AND FINANCE AS THEY RELATE TO AGRICULTURAL EDUCATION

> No clear policy. The Party and its Government has no clear policy on agriculture. It does not give enough loans to farmers to undertaken bigger exercises. It just talks about farming without doing anything. - Employee, Ministry of Agriculture and Water Development.

Introduction

The lack of adequate financial support for implementation of government policy is the essence of the problem with agricultural education in Zambia. This Chapter is confined to both an overview and analysis of government policy for agricultural education and agricultural policy as it relates to education. Opinions of farmers and needs of farmers and staff involved with extension and agricultural education are included to support and amplify the analysis. The policy review covers the Transitional, First, Second and Third National Development Plans. References are made to broad policy for maize and all types of extension programs, along with the Lima Program and Project: Operation Food Production.

The data from the field research is presented,

discussed and analysed. Observations of findings are reported at the end of the Chapter.

Objectives. The following specific objectives relating to Government policy and finance in agricultural education formed the basis for the literature review and data collection in this study.

- Determine how Zambian Government policy toward agriculture influences the agricultural education of the small farmer.
- Determine if funding priorities have an impact on most education services available to the small farmer, including agricultural radio programs, agricultural publications, Farm Institutes, Farmer Training Centers, Research Stations and extension services.

In this chapter a number of policy and finance factors are identified which appear to relate to agricultural education of traditional farmers.

Discussion of the Data

Transitional Development Plan. The 18 month plan bridged the gap at independence between the emergency extension of the past colonial government plan and the First National Development Plan, which came out in July 1966. The transitional plan represented an effort by the new government to move from financial planning to resource planning. In short, the plan contained a series of ministerial programs consisting of projects.

The main policy objectives with respect to

agriculture were:

- to move toward self-sufficiency in the main local consumption items;
- to build up the export business;
- to innovate with new crops like coffee and tea;
- to pay particular attention to the opportunities for building up the cattle and livestock industries; but above all
- to foster schemes--farmer's institutes and free fertilizer demonstrations, for example--designed to improve the knowledge and techniques of local farmers or, like any one of the various pilot projects, to lay a solid experimental basis for future development.[1]

Policy for maize and extension. There is no mention in the plan for increasing or improving extension, nor is there any direct reference to hybrid maize, nor references to the type of farmers to be reached. Experimental projects for tea and tobacco are emphasized. There is a reference to a pilot project to establish one farmer training center in every province, with the final goal being one center in every district of agricultural importance.[2]

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[1]Republic of Zambia, The Central Planning Office, Office of the President, An Outline of the Transitional Development Plan, (Lusaka: The Government Printer, 1965), p. 40.

[2]This reference is contained on page 103 of the budget section of the Transitional Plan. It conflicts with the vague reference above to Farm Institutes. While the original distinction was that Farm Institutes 'would provide upgrading training for agricultural staff' and Farmer Training Centers would provide training for farmers, in actual practice there is virtually no distinction.

There is one vague reference to an amount of 5,000 for recruiting professional and technical officers for implementation of the Ministry of Agriculture's Plan.

The First National Development Plan. The First National Development Plan was the first attempt to improve upon the past European oriented development strategies. With respect to extension services under the Federal rule from 1953-1964, the Federal expenditure on extension and direction of the services was for non-Africans. The extension services for African agriculture were dependent on local non-Federal funds.

Policy for maize and extension. In view of the fact that extension assistance for African agriculture was virtually non-existent during the colonial period and that there was a lack of formal education for Africans in general, it is clear that agricultural education was at a grave disadvantage at independence. At independence there were 1,200 Africans with locally obtained school certificates and 100 College graduates. Under the transitional development plan and subsequent plans, efforts were made to improve and increase primary and secondary education opportunities. Technical and vocational and University training institutions were added after independence.

The First National Development Plan (FNDP) recog-

nized the dual economy[1] in Zambia and made every effort to bridge the gap. The Plan established that 70 per cent of the population of Zambia was engaged in subsistence farming and 700 non-African farmers were credited with all the so-called "productive agriculture" or marketed agricultural production. (An estimated two thirds of the marketed maize and almost all the Virginia tobacco.)

Maize is described as the main food crop. The role of non-African farmers versus Africans in the marketed production is elaborated.

The following table illustrates the heavy dependency by Africans on purchased maize.

Local Sales and Purchase of Maize[2]

Commodity		Unit	European S.Tons	African S. Tons
Maize GMB & Other	Local production for sale	ST	142,000 (a)	107,000 (a)
	Local purchase for consumption[3]	ST	11,000 (b) (c) (d)	207,000 (b) (c) (d)

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[1] In Zambia the cooper mining industry provides the vast majority of Government revenues. Copper is the basis for the modern economy, and agriculture is the basis for the traditional economy.

[2] Adapted from Table II "Local Sales and Purchase of Maize and Beef" in Republic of Zambia, Office of National Development and Planning, First National Development Plan 1966-1970, (Lusaka: The Government Printer, July 1966), p. 3.

[3] The issue of maize (hybrid or local) is controversial for a number of reasons:
(1) the issue of nutritional value of maize versus local

Notes:

1. Sources: Central Statistical Office (a)
   Grain Marketing Board (b)
   Millers (c)
   Office of National Development and Planning (d)

2. There is no necessary equality between the figures for "Production . . . " and "Purchase . . . " because of the effects of Stock changes and international trade.

3. The estimate of maize bought and sold through unofficial channels is included in addition to maize passing through the G.M.B.

4. Most European purchase of maize is for stockfeed and employee's rations.

5. ST = short ton - 2,000 lbs.

The emphasis on maize as a corner stone of policy in agriculture was highlighted in the First National Development Plan (FNDP) along with Beef and Virginia tobacco. The policy objective for maize was aimed at increasing production by African farmers, as follows:

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traditional starch stables like sorghum, millet and cassava has not been fully addressed in Zambia.
2. The policy of encouraging the growth of more hybrid or even more local maize in areas where the soil requires extensive inputs like fertilizer needs to be questioned.
3. The policy issue which needs urgent clarification is that which calls for farmers to grow more for self-sufficiency. The problem here is that the farmers think they are growing more so that he or she will be self-sufficient. What the policy makers really want is growth for marketing so they can feed the large urban population in Zambia.

Production of Maize[1]
(1964 Market Prices)

	1964	1970
European	2,375	2,720
African	1,960	4,450

At the same time, the goal for maize was that supplies should be suitable for domestic demand and surplus for export could be occasional. The need was stressed for the 400-500,000 farm families to make larger contributions to the totals of marketed maize and Virginia tobacco.

In the context of bridging the gap between urban and rural people, the First National Development Plan (FNDP) called for measures which included: massive injections of capital; acceptance by the population of technical knowledge; increased levels of output which require radical changes in the social organization of scattered rural population; and . . . a psychological re-orientation towards a monetary economy.[2]

The extension program was portrayed as the centerpiece for the long run development of the agriculture industry. Specific measures included: the coverage of extension calculated at one extension worker to 740 farm

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[1]Adapted from Table III "Production of Virginia Tobacco, Beef and Maize" (1964 Maize Prices), Republic of Zambia, First National Development Plan, p. 4.

[2]Republic of Zambia, First National Development Plan 1966-1970, p. 21.

families. The Plan called for expanding the output of trained personnel at the University of Zambia and all the existing technical and vocational training schools. The Plan also called for the extension of Farmer Training Centers to all Provinces and the introduction of a new extension method of broadcasting agricultural programs. In this connection, the plan called for the establishment of a network of listening centers where villagers were to meet to listen to broadcasts.

For the extension services during the First and Second National Development Plan periods the objective was to provide technical and managerial advice to all producers. This objective was not achieved, and the reasons given included the following:

- inadequate staff
- inability to expand training facilities
- necessity to deploy limited staff over wide areas
- insufficient transport . . .
- organization and content of courses at Farm Institutes and Farmer Training Centers did not provide enough grounding in new techniques
- experienced staff were preoccupied with administration and inexperienced staff carried extension work
- inadequate supervision and poor coordination between the departmental heads and district administrators in formulation and implementation of extension programmes . . . [1]

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[1]Republic of Zambia, Office of the President, National Commission for Development Planning, Third National

Second National Development Plan. The Second National Development Plan (SNDP) covered the period January 1972-December 1976. One of the main objectives of the SNDP was to move rapidly to transform the traditional subsistence farming sector into "market oriented commercialized farming."

Policy for maize and extension. Expansion of agriculture was seen as a way to:

- improve income
- improve nutritional standards
- cut food imports
- expand economically justified exports
- provide industrial inputs
- contribute to solution of employment and income problems[1]

Self-sufficiency in basic foodstuffs was emphasized with maize and high value foods (of unspecified types) given as examples. Permanent self-sufficiency in maize with a national reserve was articulated as the most immediate aim of the Plan. Crops such as oil seeds and tobacco were highlighted as a priority for expanded production for export. Subsistence crops were not mentioned, with the

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Development Plan, 1979-1983, (Lusaka: Government Printer, October 1979), pp. 166-67.

[1]Republic of Zambia, Ministry of Development Planning and National Guidance, Second National Development Plan, January 1972-December 1976, (Lusaka: The Government Printer, December 1971), p. 83.

exception of sorghum which was described as a cash crop whose use has fallen. However, it was admitted that as a subsistence crop it was to be used where maize could not be grown.

A basic difference in policy between the SNDP and the FNDP was the concept of Village Productivity Committees and the Ward Development Committees as the centers of initiative, planning and implementation of local needs. The SNDP also unveiled the concept of Intensive Development Zones.[1]

Extension and farmer training had two objectives according to the Plan, namely:

1. to increase output from the agricultural sector,
2. to establish as many as possible of the rural population as self-reliant members of the society.

The primary concern of the Department of Agriculture as articulated in the Plan was the need to bring the extension service up to full strength. The chart below illustrates the problem of inadequate staff during the Plan period.

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[1]As with the multitude of other special projects in Zambia, Intensive Development Zones are not covered in this study save to mention their existence.

TABLE 66

EXTENSION SERVICE STAFF POSITION[1]

Category	Actual	Established 1970	Actual	Required
Professional Staff	22	77	35	88
Technical Staff	57	168	129	434
Field Staff[2]	652	694	564	1,200
Total	731	939	728	1,722

Specific aspects of extension service programs according to the Plan were to be strengthened or emphasized in one way or another. These included:

1. Farmer Training at existing Farm Institute and Farmer Training Centers was to be improved before new centers or institutes were built.
2. Due to staff shortages and weak agricultural background of existing staff, extension staff were to receive continuous in-service training. The grade of Commodity Demonstrators (CDs) was to be phased out as the existing CD staff were upgraded to Agricultural Assistants (AAs).

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[1]Republic of Zambia, Ministry of Development Planning and National Guidance, Second National Development Plan, p. 73.

[2]Excluding commodity demonstrators.

3. To enable farmers to benefit from agricultural broadcasting services, Radio Forums were to be linked more closely to extension activities.
4. Transport, office space, administrative support and housing for staff throughout the country were to be adequately supported.
5. Transfers of staff were to be reduced to facilitate specialization in specific crop and farming systems.
6. Extension staff were expected to assist the Agriculture Finance Company with credit applications and processing and also to advise producers of market possibilities.
7. Through the 'open' Young Farmers Club for primary school leavers, it was expected during the Plan period to have Youth extension officers appointed at district level and a total of 9,000 young farmers were expected to be members over the period of the Plan.
8. The only mention of the types of farmers to be reached through extension efforts was made in connection with the Intensive Development Zones where priority was to be given by the extension staff.

Finally, the availability of inputs in terms of time, place and price and type was mentioned as a priority. With respect to Agricultural research, improvement of the

productivity of the rural areas was the priority. Due to shortages of manpower, research was to be linked as closely as possible to extension service and production requirements. "Special efforts will be made to ensure that research findings are disseminated and applied promptly and effectively."[1]

The actual projected expenditure for all of the Ministry of Rural Development's programs during the SNDP is presented below. In terms of projected expenditure, Agricultural extension and Training rank third. The fact that expenditure at headquarters level is just under double that available to extension perhaps is indicative of a continuation of a colonial approach of top down development and development planning.

If one adds up the four key activities which were intended to provide direct services to the subsistence community throughout Zambia, they still did not add up to the amounts spent in the headquarters by just over one quarter. Table 67 includes a specific breakdown of these expenditures.

Third National Development Plan. The Third National Development Plan (TNDP) covers the period 1979-1983. One of the highest priorities of the Plan is rural development,

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[1]Republic of Zambia, Ministry of Development Planning and National Guidance, Second National Development Plan, p. 80.

TABLE 67

SELECTED EXPENDITURES IN TRAINING RELATED DURING THE SECOND NATIONAL DEVELOPMENT PLAN

Activity	Total Expenditure
Training	K 2,732,000
Agriculture (extension and training)	K 13,657,000
Agriculture Research	K 1,983,000
Community Development	K 796,000
Rural Information Services	K 510,000
Total of above Training-related activities:	K 19,678,000
For comparison purposes Headquarters Total:	K 25,971,000

and emphasis is put on six areas, one of which includes extension, namely:

> (f) adoption of investment and production programs and creation of credit, marketing and extension facilities which will benefit directly subsistence producers and small-scale farmers.[1]

As with the First (FNDP) and Second National Development Plans (SNDP) there is an emphasis on closing the gap between the rural and urban sectors, and improved and increased agriculture is seen as a means of moving from the heritage of the dual economy. The TNDP differs from the others in that it conveys a sense of urgency about the growing gap and the rural-urban migration.

The budget, however, does not reflect this urgency. Note the wide gap between the headquarters budget and the budget total for training related activities. These figures indicate that the decentralization is simply a good intention. The top down approach to development is simply escalating. The gap between the headquarters and training related programs during the SNDP period was K 6 million. The gap during the TNDP period is approximately K 23 million.

Policy for maize and extension. The following are the specific objectives for agriculture within the scope of

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[1]Republic of Zambia, Office of the President, National Commission for Development Planning, Third National Development Plan, 1979-1983, (Lusaka: Government Printer, October 1979), p. 22.

TABLE 68

TNDP SELECTED EXPENDITURES IN TRAINING RELATED ACTIVITIES[1]

Activity	Total Projected Expenditure
Training	K 6,647,000
Agriculture Extension	K 21,150,000
Agriculture Research	K 9,045,000
National Farming Information Service	K 520,000
Total of above Training Related activities[2]	K 37,362,000
Headquarters Total	K 60,596,000
Difference between the Headquarters and Training Totals	K 23,234,000

[1]Republic of Zambia, Third National Development Plan, p. 191.

[2]Note. The Figures given above on page 236 for the SNDP included the budget for community development. During the SNDP, community development was included along with agricultural education under the old Ministry of Rural Development.

rural development:

(i) To achieve self-reliance and self-sufficiency in staple foods, both nationally and regionally where feasible, and to provide raw materials for the agro-industries.

(ii) To stimulate and increase production for exports.

(iii) To increase the contribution of the rural sector to GDP and to promote diversification of the rural economy.

(iv) To improve rural standards of living and nutritional status and to create a self-reliant and progressive rural society.

(v) To create new employment and income opportunities in rural areas in order to counteract rural-urban migration, and to improve infrastructural services related to increased productivity.[1]

The strategy for agriculture is specifically directed at the three groups of emergent farmers[2] identified for priority attention in the Plan. The objective is to raise their share of the total cultivated land from 18% to 43% during 1974-83. Along with this, changes in agricultural production are expected. For the traditional sector, the objective is to reduce the total cultivated land 78% in 1974 to 51% in 1983.

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[1]Republic of Zambia, Office of the President, National Commission for Development Planning, Third National Development Plan, 1979-1983, (Lusaka: Government Printer, October 1979), p. 144.

[2]These three groups include middle-size emergent farmers, organized small-scale farmers (those who live on settlement schemes or at rural reconstruction centers) and improved village farmers--those farmers who rely on draft animals and hand labor for cultivation.

Both commercial and traditional subsistence farmers[1] will "continue to receive adequate attention." Specifically the strategy for the agricultural sector includes four of seven objectives which are relevant to this study. In addition the manpower requirements to strengthen the extension service are cited below. The TNDP projects that by 1983 one extension officer will be needed for every 400 farm families.

TABLE 69

EXTENSION STAFF REQUIREMENTS BY 1983

Category	1977 required	1983 required
Professional Staff	88	120
Technical staff	434	670
Field staff (excluding commodity demonstrators)	200	600
Total	722	1,390

(i) Improving extension, marketing processing, storage, inputs, supply and credit services to agriculture and ensuring their timely availability in adequate quantities and on time.

(ii) Decentralization of the administrative structure and encouraging increased involvement of rural people in rural reconstruction and decision making.

[1]The TNDP groups farmers into three groups, namely: (i) traditional farmers, (ii) emergent farmers, and (iii) commercial farmers.

(iii) Provision of better and expanded training facilities at various levels, to meet the increased requirements of the National Development Plan and thus reduce dependence on expatriates.

(iv) Improving and expanding existing research facilities.[1]

Maize continues to be a priority under TNDP. Two implications for extension include:

- the goal of improving the present average yield of 8.5 bags per hectare for traditional and emergent farmers upwards to at least an average of slightly over two tons per hectare and
- aim an effort on the part of extension workers to popularize seed maize production by small-scale farmers.

Traditional crops such as millet, sorghum and cassava are given much more attention in the TNDP than in previous plans. They are acknowledged as staples of particular relevance in areas where maize is difficult to grow. For millet and sorghum, the target is self-sufficiency, and for cassava the production target is 41,753 tons in 1983. For both there is an indication that they are receiving attention by researchers.

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[1]Republic of Zambia, Office of the President, National Commission for Development Planning, Third National Development Plan, 1979-1983, (Lusaka: Government Printer, October 1979), pp. 144-45.

Key issues in the field research. From the experience with the field data collection, if the research were to be repeated, I would shorten the section on policy and finance in the Farmers' questionnaire (Schedule A questions 4.01, see appendix I). A number of the farmers seemed tired by the time this section of the questionnaire was reached. It also seemed as if the farmers were not familiar with funding and policy questions, and as a result it was not very easy to ask the questions in an open ended fashion. Those questions which required ranking as most important, somewhat important, not very important, and don't know, contained between 7 and 20 elements which were time consuming to go through in a thorough fashion. One other contributing factor to problems with this section was the suspicion aroused in some of the farmers as soon as the Government was mentioned. It seemed, from various remarks made throughout the interviewing process, that some farmers felt that extension services, for example, had not improved since independence. Others felt that politicians only came to villages before elections and at that time they made promises which were not kept. As a result of the above problems, it was agreed among the four of us that whenever farmers showed signs of tiredness or uneasiness, this section should be skipped by the interviewing teams.

With respect to the similar and related questions in the interview schedules for the extension personnel and

Mpika College of Agriculture staff (Schedules C-F), the experience was not the same. These staff members were very ready to give their opinions and comments on the questions in this section of the interview schedules.

Factors related to government policy and finance. Responses by both the farmers, extension staff and College of Agriculture staff to questions relating to Government Policy and Finance are analysed based on tables containing percentages of numerical results. Where the same questions were asked each group, the responses are compared as appropriate. Question (4.03) regarding the ranked needs of farmers for education services, inputs, market prices and credit, was compared through cross-tabulation with all farmers

- using hybrid maize (1.20)
- the number of times the farmers had visits from extension staff (2.01)
- the opinion of the farmer as to his or her farming as a business, way of life, or both (5.01)
- the opinion of the farmer with respect to six types of extension education (2.03).

Forty-six farmers out of 62 replied to the question as to whether or not the Village Productivity Com-

mittee[1] helped with agriculture in the past. Ten farmers answered that during 1979, they helped a lot. Thirteen and ten respectively indicated that they helped a little and were no help in 1979. Eleven indicated that if they were available they would help a lot (4) or a little (7). A similar question was asked about "party committee." A total of forty-three farmers responded. For 1979, they indicated that it helped a lot (4); a little (4); or gave no help (17) and if available, would give a lot (2); a little (12); or no help (4).

Both farmers and extension staff complained about party officials. For example:

> These women have been fooled in the past by a politician who wanted a vote from them. He had promised to bring them chickens (broilers) for sale if they vote for him. But, after the elections, this politician never came again. (1978 elections) - Farmer

> Politicians make promises they will never fulfill for a vote. They very well know they will not fulfill the promise. This has been the case in my area and it gives us a lot of trouble. - Extension Worker

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[1]On the local level, Ward Development Committees and Village Productivity Committees are intended as part of overall policy of decentralization to enable and encourage increased involvement of rural people in rural reconstruction and decision making.

On the provincial and district levels, the strategy for regional development includes decentralization through improvement of existing provincial planning machinery and more broad-based provincial development committees and district development committees.

Party and Government officials are continuously being quoted in the local English language papers, the Zambia Daily Mail and the Times of Zambia. Inevitably they are calling on the masses to produce enough food so that the country can be self-sufficient. Usually a program like the Lima program is cited, but too often the knowledge of the respective officials begins and ends with the name of the program. The programs become political slogans and are in danger of being discredited. One recent example was titled, "'Lima' Hits Snag" and contained no relevant references to the Lima Program.[1]

Farmer training is carried out at thirty Farmer Training Centers. The TNDP calls for an increased number of farmers to be trained during the Plan period. In-service training of staff, farmer training and three-month induction courses for commodity demonstrators is provided at the eight provincial Farm Institutes.[2] Supplementary training is available through field days, group discussion and Young Farmer's Clubs.

Emergent farmers also have access to training facilities at the Kalulushi Farm College, Chipembi Farm College and Zambezi Training Farms which have joint

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[1] Times of Zambia, "'Lima' Hits Snag," October 4, 1981, p. 7.

[2] During the field data collection stage of this study, staff of the Farmer Training Center, Mpika, and staff of the Mungwi Farm Institute were interviewed.

Government/Church sponsorship. A training school for dairy farmers is at Palandaba and at Chapula farmers receive training in irrigation.

The transition from tradition to emergent farmer category is at the heart of the Government's concern in the agriculture sector. Table 70 projects the change envisioned in the amount of harvested area by category of farmer. The TNDP confirms and clarifies previous implicit and explicit policy reflecting concentration on emergent farmers. "The main thrust of agricultural policy in the TNDP will be to promote an increase of commercial farming among the middle sized and small Zambia farmers."[1]

Women. The only place women are mentioned in the Third National Development Plan is in the sections devoted to discussions of Community Development. The plan notes that there are 300 Women's clubs and 302 literacy classes, and three pages further that the women's clubs total 1,300, with a membership of 18,000 people. Some of the women who are attending functional literacy classes are learning through agricultural production. In one village the Agricultural Assistant complained that he did not have enough time to advise Community Development workers about their agricultural activities which were carried out in connection with literacy.

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[1]Republic of Zambia, Third National Development Plan, p. 58.

TABLE 70[1]

PROJECTED CHANGES IN HARVESTED AREAS BY CATEGORY OF FARMER

Category Farmers	1974 Estimated area (1000 ha)	1974 Percent	1983 Estimated area (1000 ha)	1983 Percent	Change area (1000 ha)	1974-1983 Percent
1. Traditional	1,578	78	1,136	51	+442	- 28
2. Emergent						
(i) improved	356	18	944	43	+588	+165
(ii) organized	215	11	637	29	+422	+196
smallholder	68	3.4	130	6	+ 62	+ 91
(iii) emergent	73	3.6	177	8	+104	+142
3. Large-scale commercial (includes Parastatals)	81	4	135	6	+ 54	+ 67
Total	2,371	100	3,159	100	+200	+ 9.9

[1]Republic of Zambia, Third National Development Plan, p. 151.

Every woman we interviewed, with one exception, was interested in receiving agricultural education. All the women assisted their husbands where field crop plots were involved, and virtually all women had their own home gardens. As one provincial Agricultural Officer put it:

> Question: How much of agricultural work is done by women on the farm?
>
> Answer: They do quite a lot, in fact, most of it.

The following is indicative of the prevailing situation if taken literally:

> In humanist Zambia, Man is the beginning and end of all economic activities and indeed, all development efforts revolve around him.[1]

Youth. Within the Department of Agriculture, there is a section devoted to youth. Throughout the country, the extension "youth officers" are responsible for "open" young farmers clubs. These are designed for primary school leavers of which there are an estimated 125,000 every year.[2] Within the schools young people are required to work on school production units, which usually involve agriculture.

The TNDP calls for the creation of a Ministry of

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[1]Republic of Zambia, Third National Development Plan, p. 403.

[2]UNZA Tutor Lectures on School Drop Outs, "Zambia Sitting on Time-bomb," Zambia Daily Mail, 2 September 1981.

Youth and Sport. Its objectives include a number of agriculture based schemes. There is no explicit mention of assumption by the new Ministry of the functions of the Ministry of Water and Agricultural Development, which has the nationwide open young farmer club program as one of its responsibilities. There are, however, references to "making effective use of extension officers from related ministries."[1]

In the course of this study, 80 young people were interviewed, 48 males and 32 females. Thirty-four percent were from age 5-12 years and sixty-six percent were from age 13-25. They were asked a question about the type of occupation they would like in the future. The question was deliberately confined to specific categories related to agriculture. However, at the end, they were asked if there was anything else they would like to be and 70% of the 80 children who answered this wanted a career outside of agriculture.

TABLE 71

SEX DISTRIBUTION OF CHILDREN INTERVIEWED

Female	Male	Total
38	42	80

[1]Republic of Zambia, Third National Development Plan, p. 412.

TABLE 72

CAREER CHOICES OF CHILDREN INTERVIEWED

When you grow up, what would you like to be:[1]	Not Answered	Don't Know	Answered Yes	Answered No
Farmer				
Male	2	4	25	11
Female	5	2	12	19
BOTH TOTAL	7	6	37	30
		8%	51%	41%
An Agricultural Extension Officer				
Male	1	2	19	20
Female	4	3	9	22
BOTH TOTAL	5	5	28	42
		7%	37%	56%
A Training Officer				
Male	2	2	21	17
Female	5	3	7	23
BOTH TOTAL	7	5	28	40
		7%	38%	55%
A Commercial Farmer				
Male	1	4	18	18
Female	6	3	10	20
BOTH TOTAL	7	7	28	38
		10%	38%	52%

TABLE 72 (continued)

When you grow up, what would you like to be:[1]	Not Answered	Don't Know	Answered Yes	Answered No
A District Agricultural Officer				
Male	4	3	16	17
Female	4	3	10	20
BOTH TOTAL	8	6	26	37
		9%	37%	54%
An Office Worker				
Male	3	2	16	22
Female	4	1	13	19
BOTH TOTAL	7	3	29	41
		4%	40%	56%
Others Total both Suggested 70%				
Include different types of careers such as pilots, priest, driver, nurse, all types of engineers and teachers.				

[1] K. Garvey et al., "Preliminary Findings," Table 42, question B.6.13, pp. 33 and 34.

There appears to be a gap between farmers and extension staff in agreement of a definition of what agricultural development means for Zambia.

Farmers and staff at the Zambia College of Agriculture, Mpika, were asked only what agricultural development meant for Zambia while all types of extension staff were asked to distinguish Party and Government policy for both agriculture and rural development. The question was asked in an open ended fashion. Table 73 shows the results. It is useful to compare it with Table 74 which shows the results for a similar question for farmers which was not open ended.

The Government clearly views agricultural development as a means toward self-sufficiency in basic food stuffs; but simultaneously, the priority is promoting production for export. A further distinction needs to be made and here we have no clear statistical evidence. Based on the interviewees' responses, it appears that farmers think of self-sufficiency in terms of their own production. They are not thinking of marketed agricultural goods. Whereas when the Government speaks of self-sufficiency, it is trying to reduce imports and boost production of marketed agricultural produce such as maize.

Extension workers showed a similar lack of clarity of what the Government means by self-sufficiency and grow more food. It would have been useful to ask the

TABLE 73

GOVERNMENT POLICY FOR AGRICULTURE
AND RURAL DEVELOPMENT

What is Party and Government policy for agricultural and rural development for Zambia?[1]

	Agricultural Development		Rural Development	
F. Farmers	F	E	F	E
E. Extension Staff	(N=62)	(N=43)	(N=62)	(N=36)
Self-sufficiency	26	10	-	3
Self-sufficiency and export	2	6	-	-
Self-sufficiency and migration	-	1	-	1
Export only	-	2	-	-
Grow more food	-	13	-	1
Development	-	-	-	5
National development	2	3	-	-
Raise standard of living	-	3	-	14
Total	30	38	-	24

[1]Table 45 from the report by K. Garvey et al., "Preliminary Findings," p. 47.

TABLE 74

MEANING OF GOVERNMENT POLICY FOR AGRICULTURE AND RURAL DEVELOPMENT[1]
N: 62

Policy Explanations	Farmers Replies			
	Yes	No	Don't Know	No Answer
Grow more and better crops	27	2	4	29
Eliminate poverty	37	-	-	25
Improve health and nutrition	36	1	1	24
Make the nation stronger	27	1	3	31
Make the village better	29	1	1	31
Make the district better	25	1	3	33
Make the province better	24	1	4	33
Help people to be self-reliant	36	-	1	25

[1]K. Garvey et al., "Preliminary Findings," p. 43.

respondents to specify whether self-sufficiency and grow more food means for the individuals or the nation. For the majority of the farmers, at least it may be safe to assume that they do not market much, if any, of what they grow. Many were in areas which vehicles could not reach. The closest market at Mpika had very little capacity to absorb further produce and was a considerable distance for the majority of the farmers we talked to. Therefore, while they spoke of self-sufficiency for the nation the link between them and the nation needs to be strengthened.

The Lima Program is a major new Department of Agriculture vehicle for stimulating the traditional farmer to cultivate one or more Lima's or quarter hectares. Both farmers and extension staff were asked an identical question, namely: Have you heard of the Lima Program? If yes, what is it? This question was asked in an entirely open ended fashion. Of the 42 farmers who had heard of the Lima Program, ninety percent didn't know what it was. Similarly, out of 31 extension workers who had heard of the Lima Program, eighty-four percent didn't know what it was. Conversely, sixteen percent of the extension personnel and ten percent of the farmers knew what it was.

Category A. below represents the correct answer to the question of the meaning of the Lima Program. Category B represents the political answer to the same question. The distinction is noted here because the politicians are

TABLE 75

LIMA PROGRAM, BREAKDOWN OF REPLIES
N: 62

Breakdown of definitions[1]	Farmer	Extension
A. "Quarter hectare used as a unit of measurement" (extension worker)	5	5
B. "Patch of land and maize and self-reliance" (Farmer quoting the District Governor)	18	14
C. Other "Lima is a general term used for farming" (extension worker)	19	12
D. Total having heard of the Lima Program[2]	42	31
E. Number not asked the question	20	5

[1]The material reproduced here is from Table 51, Question Nos. A.5.08, C.1102, D.16.02, K. Garvey et al., "Preliminary Findings," p. 48.

[2]For illustration purposes included comments like the following:

Farmer: "All I know is that they changed the acre to Lima" - "those without fields should have a Lima of crop"
"Plot for lazy people to reduce hunger"
"Use a rope, cup and spacing"

Extension: "Every member of the family should cultivate at least a quarter hectare"
"Two chains by two chains"
"Every village to have a Lima plot"
"One Lima to every one"

often characterized as people who provide slogans and empty promises. The quotations used in A., B., and C., below are those which come closest to the norm for that category of response.

Another area where definitions and policy have important gaps is in the categorization of farmers. The TNDP refers to three basic categories with a subdivision in the emergent category.

Extension workers concentrate on emergent farmers. In view of the ratio of extension workers to farm families, roughly 700 to one in the Mpika District and by average government estimates 400 to one farm family throughout the country, the chances of traditional farmers receiving much individual attention in spite of government policy is almost nil.

In one particular Camp area, the Agricultural Assitant who escorted us to villages at the request of the District Agricultural Officer (DAO) made heroic efforts to introduce us only to emergent farmers. We refused to interview all those emergent farmers whom this and other Agricultural Assistants attempted to introduce us to. While there is no clear statistical data to support the assertion that the Agricultural Assistants (AA) educate mainly the emergent farmers, it seemed clear from the contacts as we walked with AAs that they were most familiar with the more prosperous farmers. This impression is similar to that

described by Bratton,[1] who found that emergent farmers were those using fertilizer, improved seed, and chemical insecticide who (a) either sold more agricultural surplus than they retained or (b) cultivated two hectares of land or more. In Bratton's study all those who did not fit this description were villagers. While the size of the cultivated land differs, the distinction between farmer and non-farmer or villager is similar to our impression. Further he found that emergent farmers were the focal point of all efforts with respect to agriculture. In terms of credit, membership on village productivity committees and many other party related activities the emergent farmers were the beneficiaries.

It is not totally clear that our experience in villages reflects the reality of the emphasis on emergent farmers only. On two separate occasions in two different areas farmers (one male and one female [widow]) asked the research assistants for advice. In both cases, pesticides were required. The research assistants called on the AA to help. On both occasions, the particular AA rattled off the requirements in terms of amounts of the pesticide and the source. His attitude was one of impatience, that answering the questions was really a nuisance. In the case of

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[1]Michael Bratton, The Local Politics of Rural Development Peasant and Party-State in Zambia, (Hanover: University Press of New England, 1980), p. 91.

another AA, he either left us in the village where he took us for introductions and went back to his base or, on one occasion, he helped to shoo chickens away from drying millet while the farmer (a female) answered our questions.

On no occasion did the villagers call on the AAs for advice. It wasn't that they didn't need advice, they asked for it, but they asked us. One of the research assistants is a student at the Natural Resources Development College; so he was in a position to answer questions as we went along.

Perhaps these can best be described as impressions rather than findings. This disturbed all of us and was a topic of considerable speculation as to why farmers directed questions to us.

A policy issue which needs clarification is the number of farmers which extension personnel are expected to reach. The SNDP projected 700 farm families to one extension worker. The TNDP projects a ratio of 400 to one by 1983 and notes that the ideal would be a ratio of one to one hundred farm families.

In an effort to determine the policy two separate but related questions were asked extension staff. The inferences from answers to the first question regarding the percentage of farmers to be reached is that extension camp staff are not sure what percentage of farmers they are supposed to reach. However, as the headquarters which makes

TABLE 76

PERCENTAGE OF FARMERS TO BE REACHED BY EXTENSION STAFF[1]

Percentage of Farmers to be reached	Extension[2] Officers		Prov. Agr.[3] Officers		College of Agr. Staff		Dept. of Agr. H. quarter	
Up to 10%	2	14%	4	100%	2	50%	1	100%
Over 10% and up to 50%	3	21%	-	-	2	50%	-	-
Over 50% and up to 75%	5	36%	-	-	-	-	-	-
Over 75% and up to 100%	4	29%	-	-	-	-	-	-
No Response	-	-	-	-	3[4]	-	-	-
Total Sampled	14	100%	4	100%	7	100%	1	100%

[1]K. Garvey et al., "Preliminary Findings," Table 22, p. 36.

[2]Notes: Extension comments. "As many as possible"; "the policy is to reach 26 per week"; "There is no policy for percentage since there is no transport"; "Don't know the percentage but 10% is too low."

[3]Notes: Provincial Agricultural Officers, percentages given by each of the 4 respondents. 10%; 8%; 6%; and 1%.

[4]Notes: Comments by College staff. "Concentrate on emergent farmers where resources are scarce" and "Many factors plus the capability of the extension worker."

the policy and the Provincial staff along with teaching staff were clear that the policy is 10 percent of all farmers.

Each extension officer we interviewed (at every level of the extension service) was asked how many farmers he or she was responsible for. The following Table illustrates the number of farmers each extension officer is responsible for. It was at this point after talking to a number of extension officers that we began to realize that "farmer" was a word which meant a special type of person. From the table we see that CD's commodity demonstrators are responsible for the majority of farmers. Agricultural Assistants are responsible for a chosen few, probably emergent farmers.

The wide variety of responses to this and the question on percentage of farmers to be reached illustrates a problem which could be easily rectified if the policy was made clear to each extension worker no matter what level he or she is in the service hierarchy.

One other aspect of the same problem is that of definitions of farmers. The variety of definitions of subsistence, emergent and commercial farmers is confusing and conflicting. While extension personnel were not asked to define farmers systematically, the few who did define the various categories gave the impression that there is no clear policy for defining the types of farmers.

TABLE 77

NUMBER OF FARMERS EACH EXTENSION STAFF PERSON IS RESPONSIBLE FOR IN THE AREA UNDER HIS OR HER JURISDICTION[1]

Camp Level

Staff Respondents[2]	No. of Farmers
AA	150
SAA	110
SAA	30
CD	366
AA	92

Research Station

Staff Respondents	No. of Farmers
AA	25

ZCA Mpika

Student Respondents	No. of Farmers
CD	61
CD	450
CD	105
CD	505
CD	16
CD	375

District Level

Staff Respondents	No. of Farmers
Asst. DAO	1,230
Tsetse Asst.	31
Specialist	600

[1]Garvey et al., "Preliminary Findings," Table 26, Question C.7.17, p. 13.

[2]AA=Agricultural Assistant; CD=Commodity Demonstrator; DAO=District Agricultural Officer; SAA=Senior Agricultural Assistant; Specialist=Specialist Agricultural Officer (poultry, horticulture, etc.).

TABLE 77 (continued)

Mpika Farmer Training Center		Provincial Level	
Staff Respondents	No. of Farmers	Staff Respondents	No. of Farmers
AA	102	AA	300
		SAA	30
		SAA	110
		CD	366

Based on these responses, average number of farmers each staff member is responsible for:

Camp Level:

191 farmers per staff member

District Level:[1]

620 farmers per staff member

Provincial Level:[2]

393 farmers per staff member

Headquarters Level:

All the farmers in Zambia

[1]In the entire district there are 23 staff involved in direct extension work with subsistence farmers. Only 18 out of 23 are actively involved with subsistence farmers on a daily basis. The 18 are responsible for an estimated 12,000 traditional farmers, a ratio of 1 to 666.

[2]The total in the province is 9,000 "farmers" with 2 hectares and upwards. The total number of farm households in the entire province is 123,000.

The categorization of farmers is a highly complex and often subjective process. Each farmer interviewed for this study was asked what type of farmers he or she was and what type he or she would like to be. These answers were compared with other facts given by the individual farmers, such as amount of land and income, numbers of cattle and implements.

The farmer's view of his or her farming as a way of life or business or both was asked partly to help in the cross checking process as to the actual category to place the farmer in; but it was asked primarily to determine if the farmers saw their way of life as a means of business or survival only. Fifty-five percent indicated that farming was a way of life. Thirty-six percent said farming was both a way of life and a business. Nine percent felt it was a business, and for one percent, there was no information. If one combines the categories of "both" way of life and business, the total percentage is forty-five. This may indicate that almost half the farmers are inclined toward more complicated farm management practices than that demanded through traditional subsistence farming.

It may also indicate an interest and willingness to expand or improve farming activities.

Fifty-eight farmers out of sixty-two answered the question, "Is your self-sufficiency in food improving or declining?". Extension staff were asked the same question

TABLE 78

FARMERS VIEWS ON FARMING AS A WAY OF LIFE, A BUSINESS OR BOTH[1]

	Male	Female	Both	N=56 (%)
Way of Life (not included in Both)	18	13	31	55%
Business (not included in Both)	3	2	5	9%
Both	10	10	20	36%
No Information	3	3	6	1%

The results are included in Table 79.

If one adds the farmers' percentage for decline, 34%, with the static figure, 9%, the total, 43%, does not give a very favorable impression. This is particularly true in view of the fact that self-sufficiency is the number one priority for the nation and possibly the chief priority of the farmers too.

Observations and Findings

Growing more maize either Hybrid or traditional is the centerpiece of agricultural policy in Zambia. In turn, the focus of agricultural education efforts is Hybrid maize.

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[1]Garvey et al., "Preliminary Findings, Table 59, Question A.5.01, p. 53.

TABLE 79

FARMERS AND EXTENSION STAFF OPINIONS OF THE IMPROVEMENT OR DECLINE OF SELF-SUFFICIENCY OF FARMERS[1]

	Farmers				Extension Staff			
	Male	Female	Both	% Farmers N=58	Male	Female	Both	% Ext. N=38
Improving	18	15	33	58%	20	2	22	57%
Declining	9	11	20	34%	5	4	9	24%
Static	4	1	5	9%	7	0	7	18%
No Information	3	1	4	6%	2	3	5	12%
		(out of 62)				(out of 43)		

[1]K. Garvey et al., "Preliminary Findings," Table 48, Questions C.11.01 and A.5.02, D.16.01, and E.17.29, p. 53.

Hybrid maize. In the Mpika District and throughout the Northern Province, Hybrid maize requires expensive inputs, including gypsum, which is not available. The Third National Development Plan (TNDP) provides for the manufacture of gypsum, which is found in Zambia.

Subsistence crops such as sorghum, millet and cassava are traditional staples and are grown by virtually all the people interviewed in the course of this study. Judging from the development plans and interviews, there has been little research done on these crops and there is virtually no education about them.

Numbers of farmers. It was clear from the field research that extension staff have widely differing views on the numbers of farmers they are expected to reach. In turn, the farmers have opinions as to the reasons for the lack of contact with extension staff. The policy should be clarified for the benefit of both farmers and staff.

Types of farmers. While the visible official policy through the years has been to provide agricultural education for all farmers from subsistence farmers on up, the reality appears to be that emergent farmers have been and are the priority for contact. The criteria used to identify those farmers is not clear. According to extension officers, those cultivators with 2 hectares or more under cultivation are termed farmers, but this conflicts with common views on Zambian agriculture. The use

of this distribution appears to have created an artificial class system. The fact that traditional farmers are "not farmers" may be the reason why they did not ask for help. They know they are not in the right class. Clear criteria for defining various types of farmers should be developed. Further, the types to be reached should be clarified with the farmers, the schools and the extension personnel.

Agricultural policy. Self sufficiency in the main consumption items is the goal for agriculture in Zambia. The problem with this policy is that the Government has one understanding of the meaning of the policy and the subsistence farmers have another. The Government wants to stop imports, and the farmers want to have enough to eat.

Farmer Training Centers and Farm Institutes. The essential policy was to extend these institutions as rapidly and widely as possible. However, it is essential to note, that:

- sufficient funds are not made available for basic maintenance of the Institutes and Centers
- recurrent funds for training programs are not available,
- there is no discernible policy for the choice of trainees; it appears that choice is up to the AAs, not to the farmers.

Funds should be made available both for maintenance and Training Programs. A better policy for choosing

trainees should be developed. Alternatively, the programs should be open to anyone for a nominal fee, and scholarships should be available for those who can't pay.

Extension education. From the responses of the extension staff it appears that there is a morale problem among the staff from the Provincial level on down.

- AAs remain too long in their posts
- there are too few extension staff members and too many farmers
- because the policy issues are either unclear or foolish, it is difficult for AAs to implement them.

Village Productivity and Ward Development Committees do not appear to be active or helpful with respect to agricultural education.

All of these points could be addressed by the formulation of clear policy and communication of that policy. Operation Food Production, which seeks to reactivate the involvement of party committees and personnel in agricultural education, could have a positive effect if the party cadres are given agricultural education and clear policy guidelines. Otherwise this effort, like the Lima Program, will face the danger of existing only as a slogan for party and government spokespersons.

Research. The intention of the Second National Development Plan (SNDP) should be realized with respect to research staff. Responses from extension and research

personnel indicate that there is no communication between them. For research personnel in the rural areas contact with farmers is non existent. They communicate their research findings to the headquarters, which then disseminates them. Research stations should be used to investigate problems of farmers, and research staff should have a responsibility to communicate with farmers and extension officers.

Transport. Funds should be made available for transport, including vehicles and petrol. Bicycles and motor scooters should be available for Camp staff at no cost to them.

Youth. The policy for youth extension should be evaluated and revised on an urgent basis. The new Ministry of Youth projected in the Third National Development Plan (TNDP) should either provide staff and resources to the extension service or, alternatively, should form an extension section, and existing staff of the extension service should run that section. As it is now, the Provincial Youth Extension Officer must implement youth programs through the Camp staff. Since he has minimal access to transport, he can neither supervise nor communicate effectively with the people who actually implement his programs.

Women. Policy with respect to the female extension service should be evaluated and consideration should be given to a merger of the Community Development Service into

the female extension.

The role of women farmers in agriculture should be recognized, and all types of agricultural education should be available to women. The TNDP has as one of its objectives the improvement of rural nutritional status. Nutrition education should be part of the official job descriptions of both male and female extension and training staff. The apparent tragedy of farmers selling their produce while their children are dying of malnutrition must stop.

Grow more food and self sufficiency. The two slogans, grow more food and self sufficiency, must be clarified at all levels, including politicians, farmers and extension staff.

C H A P T E R V I I I

VARIABLES ASSOCIATED WITH THE USE OF HYBRID MAIZE

The three previous chapters provided basic numerical reports on the findings with respect to Government policy and finance; to logistical and organizational factors; and to educational methods and content as they relate to agricultural education.

This chapter focuses on the findings which resulted from use of the SPSS computer program.[1] Two statistical analyses were conducted. The first was a regression analysis which was performed in order to see which independent variables influenced the use by traditional farmers of hybrid maize, the dependent variable. The second was cross tabulations which were designed to try to identify the needs of farmers who were either growing or not growing hybrid maize and who considered their farming a way of life, a business or both.

At the proposal and instrument development stage of this study, computerization of the data was considered and

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[1] N.H. Nie, C.H. Hull, J.G. Jenkins, K. Steinbrenner and D.H. Bent, SPSS, Statistical Package for the Social Sciences, (New York: McGraw Hill Book Company, 1975).

rejected because of time and resource constraints. However after the data had been tabulated by hand, it became clear that it was too time-consuming and virtually impossible to do some of the comparisons by hand. It was also determined that it would be useful to try to determine statistically if growing hybrid maize was related to extension contact or to anything else.

The only variable significant in explaining adoption of hybrid maize was contact at .022. It is difficult to determine whether the contact with extension caused the adoption or if the adoption caused the contact with extension. Table 80 is a summary table illustrating the significance for each variable. The variables used are described in detail below.

Maize is grown as a starch staple throughout Zambia and hybrid maize is gradually replacing the traditional maize. To be grown successfully, hybrid maize requires the use of hybrid seed and fertilizer. In the Northern Province, lime is required, and pesticides and herbicides may also be required. The yearly maize crop in Zambia fluctuates from year to year and usually imports are required to make up shortfalls in marketed production. Among traditional farmers maize is usually grown for home consumption with the hope that any excess will be sold.

Maize is used in this study as the dependent

TABLE 80

REGRESSION ANALYSIS VARIABLES
AND SIGNIFICANCE

Variable	Significance
Age	.793
Size	.243
Camp I	.848
Contact	. 22
Had	.880
Sex	.467
Tribe	.845
Way	.188
Income	.610
Camp 2	.260

variable[1] for three reasons: (1) It is a starch staple used throughout Zambia; (2) Growth of hybrid maize is one of the firm clear policy requirements for agriculture in Zambia; and (3) The use of hybrid maize by traditional farmers is associated with movement up the farming ladder. In addition to either hybrid or traditional maize farmers also grew other starch staples like cassava, sorghum and millet. These crops often provided an insurance against failure of the Maize crop.

Age. The age ranges used included 19 years and below; 29-29; 30-39; 40-49; 50-59; 60-69; 70-79; and 80 and upwards. Youth or farmers ranging in age under 50 years have been found to be more modern in some studies.[2]

Size. This refers to the amount of land being used for crops. The sizes included 1 Lima; 2 Limas; 3 to 8 Limas; and 10 to 12 Limas. The Lima equals one quarter of a hectare. The question as to the amount of land used for crops was put to farmers in an open ended fashion, and

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[1]For an interesting discussion of the use of maize as a dependent variable see Peter Norman Hopcraft, "Human Resources and Technical Skills in Agricultural Development: An Economic Evaluation of Educative Investments in Kenya's Small Farm Sector" (Ph.D. dissertation, Stanford University, 1974), pp. 62-64.

[2]In Shapiro's study of Tanzania, 34 young farmers who were under the age of 50 were found to be "significantly more modern than those over 50." See Kenneth Howard Shapiro, "Efficiency and Modernization in African Agriculture: A Case Study in Geita District, Tanzania" (Ph.D. dissertation, Stanford University, 1973), p. 262.

answers were given in a variety of ways. For example some people just said they had one or more chitemene gardens, others described their field crop plots and home gardens in terms of acres and still others used hectares to describe the amounts of land under cultivation. No efforts were made to measure the farmers' plots. It might have been useful to do it but it was judged to be very time consuming and it was felt that by asking each farmer a variety of questions a fairly accurate picture of his or her status as a traditional or emergent farmer could be assessed. It is quite possible that some of the amounts were exaggerated partly because farmers do not have any measurement devices and partly because they are aware that the Department of Agriculture extension staff identify and list as "farmers" those with 2 hectares or more. We did not systematically try to check but it appeared to be the case that those farmers not growing 2 hectares or more were neither "farmers" nor provided with extension advice.

Camp I, Camp II and Camp III. The Mpika Main Camp was termed Camp I, Camp II was the Chalwe Camp and Kopa Camp was Camp III. The observations not identified for Camps I and II were Camp III. The respondents were divided by proximity to one of the three camps because it was assumed that those farmers living nearest the Farmer Training Center in Mpika and near Mpika itself were receiving more attention and education than those farmers in remote rural

areas. Accessibility to the services and such things as markets was assumed to be an added incentive for farmers to grow hybrid maize. Those farmers from the Chalwe and Mpika Main Camps were also near the line of rail. The results of a cross tabulation which compared farmers from the different camps with their assessments of the helpfulness and nonhelpfulness of Farm Institutes and Farmer Training Centers and Field Days were not conclusive. It did not appear that those farmers nearest the Mpika Farmer Training Center were the only beneficiaries of training. It might have been useful to compare villages within the camps using distance as a yardstick. The use of other agricultural education methods in the comparison would have been of interest.

Contact. The actual number of times farmers received agricultural advice in 1979 or earlier ranged from 1 to 10 times. If the farmer answered "many times" the number assigned was 10 and if the farmer answered "several" the number assigned was 5. The location of the contact was either the Farm Institute, Farmer Training Center; the Farm; the Home; the Agricultural Camp or the village. The person who gave the advice was either an agricultural assistant or a commodity demonstrator.

Had. This refers to the question addressed to farmers as to whether or not they have ever had an AFC Loan, (Agricultural Finance Company) loan. This question

was asked because it was assumed that only innovative farmers would dare to take on the responsibility of a loan. We found generally that farmers were suspicious of loans as being a way that they would lose their belongings if they were unable to repay.

Sex. In the context of this study, it was intended from the beginning that women farmers would be included as participants in the interview process. Interesting differences between men and women's responses are highlighted in Chapters V, VI, and VII. It would have been interesting to check for variations in women's responses as compared with men in the cross tabulations.

Tribe. The majority of the people among the farmers and children were either Bemba or Biza. There was no assumption in this case that there would be any differences in participants responses to various questions.

Way. The question as it was put to farmers here was, "Is your farming a way of life or a business or both?". This question was asked to try to determine if farmers have a traditional outlook only or if they are interested in a lifestyle which includes marketing and money. The responses in general indicate that the majority of the farmers consulted view their way of life as a business or both. It is assumed that this indicates that farmers are willing to try new crops and techniques.

Income. The responses ranged from "no cash income"

or that they don't know how much they earn to earnings reported at over K500. This question was asked as a supplementary check question in an effort to identify only traditional farmers for this study.

The results of the cross tabulation exercise reported in Table 81 and 82 below confirm earlier findings that farmers need fertilizers, seeds and insecticides along with better prices and credit or loans. Both Extension education and Farm Institute and Farmer Training Center programs ranked the lowest in terms of need. These details apply to those farmers who are growing hybrid maize. The same pattern was evident for those farmers who are not growing hybrid maize with the exception of credit or loans. Those farmers who are not growing hybrid maize and for whom farming is a way of life indicated that credit and loans are not very important. This would appear to be consistent with the assumption that more modern or innovative farmers get or try to get loans.

In general, the results of the use of the computer provided interesting supplementary information. The results of the hand tabulated findings reported in earlier chapters are confirmed. It could be an interesting follow-up exercise to try to determine what combination of variables account for the use of hybrid maize.

The following two charts represent those who are growing hybrid maize and those who are not growing hybrid

maize, approximately half the respondents indicated that education was only somewhat important. It might be interesting to try to determine how many of these were women.

TABLE 81

FARMERS WHO ARE GROWING HYBRID MAIZE

(1 = Important; 2 = Somewhat Important; 3 = Not Very Important)

Farmers Farming Objectives	credit/ loans			Fertilizers Seeds/ Insect.			Marketing			Ext. Service			F.I. F.T.C.			Prices		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Way of Life	7	3	3	11	1	2	7	4	1	6	4	1	4	5	2	10	1	2
Business	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Both way of Life & Business	4	2	1	5	2	-	3	2	-	5	1	1	2	1	1	4	2	-

TABLE 82

FARMERS WHO ARE NOT GROWING HYBRID MAIZE

(1 = Important; 2 = Somewhat Important; 3 = Not Very Important)

	credit loans			Fertilizers Seeds/ Insect.			Marketing			Ext. Service			F.I. F.T.C.			Prices		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Way of Life	3	3	5	7	4	1	5	6	-	6	5	1	4	3	5	6	3	2
Business	2	1	1	2	2	-	3	-	-	1	2	1	-	1	2	3	-	1
Both way of Life & Business	3	1	3	4	1	1	4	1	2	4	2	-	3	3	-	7	-	-

CHAPTER IX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter is divided into three sections which cover: a summary of the study including the extent to which the objectives were met; general conclusions and recommendations; and recommendations for further research.

Summary of the Study

The major purpose of this study was to identify the factors which impede the delivery of agricultural education as well as those which impede the traditional farmers' receptivity to agricultural education. The focus of agricultural education throughout Zambia is hybrid maize and consequently it is singled out in this study. Mpika District in the Northern Province of Zambia was the site of the field research which involved traditional farmers and children. Therefore, the results of the research may be considered to apply to those interviewed only. Department of Agriculture extension staff were interviewed at all levels, including the headquarters in Lusaka, the Provincial headquarters at Kasama, the Mpika District headquarters, the Mungwi Farm Institute near Kasama, the Farmer

Training Center near Mpika, three agricultural camps in varying distances from the District headquarters at Mpika, and Zambia College of Agriculture at Mpika.

The extension system in Zambia is uniform throughout the country and the results may be interpreted to apply to Zambia. One point must be taken into consideration; there are three Provinces in the country which are dominant in terms of marketed agricultural production, namely the Southern, Central and Eastern Provinces. The other provinces, including the Northern Province, are by comparison less productive, particularly in terms of marketed agricultural output. Thus nationwide application of the data collected in this study could be cautiously made although it has not been attempted here.

A variety of research techniques within the framework of participatory research were employed to carry out this explanatory study. Data for this study were collected through interviews, review of Government Development Plans, a number of relevant studies and visits which were made to individuals and organizations such as the Community Development Department.

Interview schedules (see Appendices A-F) were developed, and those for Farmers, A, and Children, B, were tested and revised on the basis of tests. The interview schedules, C. Extension, D. Extension Training personnel, E. Zambia College of Agriculture, Mpika, and

F. Provincial Agricultural Officers, utilized many of the same questions put to farmers and in addition included questions on background and policy or training related questions, depending on the type of people to be interviewed.

The research effort was divided into three major areas in an effort to explore all the important facets of agricultural education, namely: the educational methods and content; logistical and organizational issues as they relate to agricultural education; and government policy and finance as they relate to agricultural education. Issues of modernization and innovation are noted where relevant.

The analysis of the data is based primarily on the use of descriptive statistics. Approximately one half of all the data collected was analyzed. Two people were employed full time for two months to break down, record, and develop tables for the data. The interview schedules were not designed for computerization. Nevertheless, it was decided to examine, through use of the computer, those variables related to the use of hybrid maize.

Discussion of the Objectives

The following section discusses the objectives and the extent to which they were met by this study.

Educational methods and content.

Objective 1. Determine what methods of transmitting agricultural education have an effect on subsistence farmers' learning and understanding of new knowledge and techniques for crop, livestock, and poultry production.

Both farmers and extension personnel concurred that demonstrations are the best agricultural education method.[1]

The questions used in the interview schedules were designed to solicit opinions of farmers and extension staff. The scope of this study did not cover the actual retention and application of specific types of knowledge gained from various types of agricultural education. Only one study on Zambia was found which sought to determine over time what knowledge farmers used or did not use after they received education in that case after attending a Farmer Training Center and Farm Institute Program.[2] See

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[1]Others in order of preference: "very useful," by percentage were, for Farmers: Group Discussion 70%; Discussion between two people 54%; Radio 35%; Lectures 28%; Reading materials-Bemba 26%; Films and Slides 24%; and for extension: Group Discussion 83%; Discussion between two people 48%; Radio 31%; Reading material-Bemba 53%; Films and Slides 45%; Lectures 28%. Extension staff only were asked about Popular Theatre, and 39% found it "very useful" and 62% "useful." Extension staff were also asked about Farmer Institute and Farmer Training Center programs only. Sixty eight percent said they were "very useful"; 28% said "useful" and 21% said "useless."

[2]See D.I. Chilimboyi, "An Evaluation of the Institutionalized Farmer Training Centres in Southern Province," AE 120 Field Project, University of Zambia, Dept. of Extra Mural Studies, 1971/72. Discussed in detail in Chapter III.

the discussion of the D.I. Chilimboyi study in Chapter III.

Objective 1 was met to the extent that farmers and extension staff indicated their opinion of the effectiveness of demonstrations. Demonstrations were identified as a first choice in a number of differently worded questions. They were the most popular choice of children for learning in general. Demonstrations are very likely to have an effect on farmers' learning and understanding of new knowledge and techniques for crop, livestock and poultry production.

Objective 2. Determine what knowledge and skills about agricultural production are gained from non-formal agricultural education programs.

Farmers do not have access to any formal agricultural education programs. However, they gain education and information from non-formal sources. Farmers indicated a great variety of types and sources of knowledge and skills.[1]

In addition to asking the farmers to report the kinds of knowledge and skills they have gained, they were

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[1]Hybrid maize, Maize, Sunflower, Soyabeans, Tobacco, Cotton, Cassava, Rice, Millet, Sorghum, Groundnuts, Beans, Sweet potato, Irish potato, Vegetables (rape tomato, onions, cabbage), Advice about how to get credit/loans, Advice about marketing, Advice about seeds, fertilizer and insecticides, Advice about storage, Advice about management/planning, Advice on alternative crops to grow, Citrus fruit, Bananas, Cattle (raising, dipping, vaccination), Oxen, Dairy, Pigs, Goats, Poultry, General extension advice (Lima, plowing, planting, harvesting techniques), Advice on Government agriculture policy.

asked what they would like to learn. They were also asked what success in growing maize depended upon. The question about success in growing maize was not intended to test their knowledge. It was intended to be used to determine how many farmers believed in magic or good fortune. Nevertheless the majority of farmers indicated the basic necessities for growing maize properly. The actual source of the knowledge was not asked but judging from the responses to other questions, the knowledge and skills were likely to have come from one of the non-formal education sources, as already discussed elsewhere.

This objective was met in that the farmers indicated what educational information they had received. The extent to which this knowledge and/or skills were applied was not measured. It was not the intention to measure it. This would have required different measurement techniques. What was intended here was to determine the types of knowledge and skills farmers were getting.

Objective 3. Determine what factors influence utilization of new knowledge and techniques in agricultural production.

A variety of questions were posed in pursuit of this objective. Several questions centered on the new knowledge and techniques related to the production of hybrid maize. Farmers indicated that the reasons for not using hybrid seed included the lack of funds, non-

availability of seed and fear of being bewitched. The questions relating to the hybrid maize, however, received such low response that they are of no statistical significance. However, farmers indicated that they grew hybrid because of "good flour," "good yield," and "good growth," that they try new methods before their neighbors, and that they were not afraid to grow more maize than their neighbors.

Farmers were also asked what the success of maize production depended upon. Thirty-four farmers out of a total of 48 respondents attributed such success to hard work. Only three farmers thought that "money," "medicine" and "good fortune" were also important.

Both farmers and extension staff were asked if it was necessary to read and write in order to improve. Their responses were almost evenly divided on whether or not it was important to be able to read and write in order to improve farming methods and practices. Thus from the available evidence, it was not possible to conclude in this study the degree to which ability to read and write influences use of new knowledge and practice.

In the context of educational methods and content this objective was met in that a variety of factors were identified. A number of factors which originally had been thought to be important were revealed to be unimportant.

Logistical and organizational factors.

Objective 4. Determine what subsistence farmers feel are limitations on utilizing information they receive.

The reason behind the development of this objective was the assertion by some authors that the actual education available to farmers is not relevant, or is geared too high or too low in terms of technical information.[1] Another limitation has to do with encouragement to grow more maize or other things like vegetables when there are no markets. The lack of inputs like seeds, fertilizers and insecticides is another limitation. Low prices for agricultural produce, shortages of labor and old age were others also identified as limiting factors. Another limitation for traditional farmers was the inappropriate size of bags of fertilizer, vegetable seeds or hybrid seeds and the expense. It is expected with the implementation of the Lima program, where inputs will be sold in Lima size packages at an affordable price, that problem may be improved.

This objective was met in that farmers indicated non educational problems which influenced their agriculture. These factors clearly inhibit the use of information with respect to new crops or innovations in agriculture.

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[1]See A. Marter and D. Honeybone, The Economic Resources of Rural Households and the Distribution of Agricultural Development; and D. Honeybone and A. Marter, An Evaluation Study of Zambia's Farm Institutes and Farmer Training Centers.

Objective 5. Determine how learning and utilization of new techniques with respect to agricultural production is influenced by indicators such as frequency of contact, areas to be covered, transport, levels of administration, etc.

The first step in meeting this objective was to ascertain whether or not in fact frequency of contact with extension personnel, transport, areas to be covered and levels of administration were relevant factors. With the exception of levels of administration, the others clearly were. Based on the research and interpretation of the data the following are the ways learning and use of new techniques are influenced:

- Transport Without transport, extension staff cannot reach farmers. Farm Institute and Farmer Training Center staff cannot carry out programs. Provincial and District administrative staff cannot supervise those staff under them. Specialist staff, youth and female extension staff cannot go out to advise their constituents.
- Frequency of contact It is commonly understood that the more contact a farmer has with extension staff, the more likely that he or she will have a successful harvest. With respect to hybrid maize, approximately one quarter of the farmers interviewed indicated that they

had been visited. Of these, 8 had attended a Farmer Institute or Farmer Training Center program more than once in 1979. Another quarter indicated that they had been visited once in 1978 or 1979.

- Areas covered In each of the three agricultural camps visited in the Mpika District there is one Agricultural Assistant per camp. In the Northern Province the average farthest distance covered to reach farmers may be up to 350 kilometers. It is unlikely that any farmers beyond a 7-15 kilometer radius are ever reached by the Agricultural Assistants, who have no transport.
- Levels of administration It could not be determined if this is a problem. However, there did appear to be a problem with the number of supervisors which extension staff report to. Seventeen reported that they report to two or more supervisors and when asked to state specifically to whom they report directly, nine named more than one person to whom they report. An extension staff member who has to report to more than one supervisor may be spending more time than necessary trying to please all of his or her bosses.

This objective was met from the point of view of questionnaire influences. Qualitative aspects of learning or use of new techniques were not measured.

Government policy and finances.

Objective 6. Determine how Zambian Government policy toward agriculture influences the agricultural education of the small farmer.

It is clear from the development plans, the extension staff descriptions of priorities in their jobs and the farmers' statements about what types of education that they are receiving that some government policy is well known. For example, slogans like "grow more" are well known and "hybrid maize" is widely known.

The policy toward agriculture is mirrored in the extension personnel interpretation of priorities and the indication from traditional farmers of the type of assistance they receive. There are three main ways policy actually affects their agricultural education. The first is that traditional farmers are not the target group for extension staff. Emergent farmers are the priority targets.

Secondly, they are told to grow hybrid maize even in areas where the soil is unsuitable. They are discouraged from growing (or not encouraged to grow) their traditional subsistence crops. As a result they can neither succeed with hybrid maize nor get out of the subsistence

trap because markets, education or inputs for other crops are not available.

Thirdly, policy stresses production for money, and self sufficiency and export. As a result the message most frequently heard by farmers is "grow more."

There is one problem which emerged from the interviews. Farmers tend to think of self sufficiency in terms of their own self sufficiency, not that of the nation. The Government policy is that the nation should be self sufficient in terms of the main local consumption items. The traditional farmers do not realize what a large urban population the Government has to feed; that population causes the continual calls for increased production and self sufficiency. Finally, money did not seem to be a priority or serious problem for the farmers interviewed.

Objective 7. Determine if funding priorities have an impact on most educational services available to the small farmer, including agricultural radio programs, agricultural publications, Farm Institute and Farmer Training Centers, research stations and extension services.

From the review of the Second and Third National Development Plans the following emerges:

- The headquarter's budget for the Department of Agriculture has more than doubled from K 25,971,000 during the SNDP period to K 60,596,000 for the TNDP period.

- Provision for extension was not doubled. SNDP K 13,657,000 increased to TNDP K 21,150,000 only.
- Agricultural research quadrupled from K 1,983,000 in the SNDP to K 9,045,000 in the TNDP.
- The rural information services in SNDP were allocated K 510,000 and the renamed National Farming Information Service received K 520,000 for the TNDP period.

The Government may talk about agriculture being a priority but increasing a research budget to a mere K 9,045,000 and more than doubling a headquarters budget is a telling example of lack of commitment to rural areas.

The practical reality which is summarized below is unlikely to be improved during the period of the TNDP. If there are any agricultural publications in the Mpika District, we did not find any evidence of them. Farmers were aware of agricultural radio programs. If they are listening and learning from radio farm forum discussion groups, this was not apparent to us. We did find a pile of unrepaired radios in the Provincial headquarters. The Mungwi Farm Institute and the Mpika Farmer Training Center were operating at less than 50 percent capacity. That estimate may even be generous. The limited funds which are budgeted are not released on a monthly basis. The extension service field staff suffer from continual shortages of

funds for transport, demonstration inputs, housing and office space (the agricultural assistants use their houses as offices, while the District and Provincial staff have offices), and overnight or overtime incentive pay. Funds for petrol for transport are budgeted but not released. Transport is not available for the Commodity Demonstrators or other camp staff who actually have direct contact with the traditional farmers. Nor is it available for specialist staff in the District and Provincial offices. It is clear that the lack of adequate funding or release of funds stifles the extension services.

Conclusions and Recommendations: Educational Methods and Content

The following conclusions and recommendations were developed from the observations and findings sections of Chapters V, VI, and VII.

Educational methods. Farmers and extension staff during the course of this study gave a clear indication of the degree of usefulness of the various agricultural education methods in use in the Mpika District. The most popular method is "demonstration."

The results with respect to farmers and children are limited to the populations sampled. The results with respect to extension may be cautiously applied to the entire extension service. What must, however, be borne in

mind is the agricultural potential of the Northern Province and the Mpika District in particular. The fact that the Province has only recently been on the line of rail due to the completion of the Tanzam Railway is a factor to consider.

"Demonstrations" should be made more widely available and the agricultural staff responsible should be supported with a budget for demonstration inputs, incentive allowances for carrying them out in the remotest villages and quotas for numbers to be held in any crop year.

Farmers and extension staff clearly consider radio programs related to agricultural written materials and posters related to agriculture, and agricultural films and slides to be supplementary methods of education. Nevertheless, these methods appear to exist virtually in name only.

"Group Discussion" and "Discussion between two people" ranked by both farmers and extension behind "demonstrations" in popularity.

"Lectures," which are a legacy of the colonial past and an authoritarian teaching method, received virtually the lowest percentage of favorable responses by both farmers and extension.

The capacity of the extension service to administer and provide quality programs geared to the levels of the farmers at the Farm Institutes and Farmer Training Centers

should be carefully examined.

While the Zambia College of Agriculture staff reported that techniques in adult education are part of the program for students who will be the future Agricultural Extension Camp staff, none of the AA's or other extension staff reported educational background or refresher courses in adult education.

The farmers were not asked their opinion about popular theatre. Extension staff were asked, and the majority who responded thought it would be useful if it were available.

Virtually everyone in rural communities serves or can serve as a resource person in the field of agriculture. Farmers indicated that help in agriculture was received from sources such as neighbors and relatives, mission and church personnel, and school and party teachers and cadres.

Research station personnel from the substations or stations could be active participants in rural development if the lines of authority were changed.

Educational content. All types of farmers should participate in monthly discussions where camp and District staff plan work and time tables for various aspects of extension education.

Farmers should be members of the advisory boards of Farm Institutes and Farmer Training Centers in order to

help insure the relevance of the programs.

Farmers should not be advised to grow certain crops like vegetables if there are no markets to warrant increased production.

The role of extension staff vis-a-vis traditional farmers on questions related to their crops (of all types) should be clarified to both the extension staff and the farmers.

Extension assistance should be provided for those farmers growing traditional subsistence crops. The fact that hybrid maize should not be grown by those who can't afford it should be understood by farmers, extension, and party and government officials.

Farmers of both sexes indicated that community development education, which includes nutrition education, would be very useful if available. Extension staff also indicated that their job descriptions should include nutrition education.

General issues of educational methods and content. The use of the training and visit system should be reviewed. It should not be required for camp staff, who physically, even with proper transport, cannot implement it.

A system for following up with farmers' Farm Institute and Farmer Training Center programs should be mandatory.

The stratification and classification of farmers

by vague criteria possibly known only to each extension officer should be eliminated. Education should be available to farmers who want it.

- Radios should be provided and maintained for Radio Farm Forum discussion groups.
- Participation in agricultural shows should be open.
- Attendance at Farm Institute or Farmer Training Center programs should be left to the choice of the farmers. A system of paying for the privilege of attending in cash or in kind might be tried.
- Simple and practical illustrated materials should be available for use in conjunction with extension education, especially Radio Farm Forums and Farm Institute and Farmer Training Center programs.
- Inputs for demonstration should be available to extension staff free of charge.
- Films and slides should be available, particularly at Farm Institutes and Farmer Training Centers.

Conclusions and Recommendations: Logistical and Organizational Factors

There is extensive confusion in the extension service with respect to the numbers and types of farmers to be reached. The number and types to be reached should be clarified.

There is a tendency for new programs to be used as political slogans and to exist only in speeches. The Operation Food Production and Lima Program, which are in the process of being imposed, should be reflected in the job descriptions of all who are concerned with implementation.

Basic transport and equipment are not available to the camp staff or even the specialist staff who usually work from the District or Provincial offices.

In view of the tremendous distances involved, the extension service should define the distance they expect camp staff to travel: on foot, by bicycle, bus, motor scooter or by hitching rides.

Due to the distances involved and shortages of staff, the extension service should not require their staff to use their own funds when the work requires travel for long distances; staying overnight or overtime. An incentive pay system should be implemented.

District and Provincial Administrative Staff have transport but its use is limited by lack of petrol. Therefore all Technical staff should be assigned to camps.

The Farm Institutes and Farmer Training Centers should be functioning at 100 percent capacity instead of less than 50 percent.

Due to the shortage of staff in Mpika District, more staff should be made available on a priority basis.

The Northern Province Provincial Agricultural officer (PAO) estimated that staff requirements for his Province included 6 Natural Resources Development College (NRDC) graduates and 15-20 new Agricultural Assistants every year.

Agricultural Camps should be renamed and made the center of extension activity.

Cases where extension staff have been in the same position for more than 5 years should be investigated and rectified. All those extension staff without any job descriptions should have them.

The youth extension service should not have to rely on camp staff to implement and organize activities.

The female extension service should not concentrate on home economics only, since women are participating actively in all aspects of agriculture alongside their husbands.

Women should have the opportunity to attend and participate in all types of agricultural education programs.

In the present system the linkages between research station and substations staff are non-existent. The research station staff should be able to respond to requests from farmers and extension staff who need advice or assistance.

Government Policy and Finance Factors

Government policy with respect to growing hybrid maize throughout the country should be qualified to ensure that it is grown where the soil realistically permits it to

be grown.

In view of the fact that many farmers are growing traditional subsistence crops, the Government should support and encourage growth of these crops.

There appears to be confusion at all levels in the extension service with respect to the types of farmers to be reached. A policy should be developed for the types of farmers to be reached.

The class system which has developed between "farmers" and "non farmers" should be eliminated.

If self sufficiency in the main consumption items is the goal for agriculture, the Government should make this policy clear and realistic. The farmers want to have enough to eat and the Government wants to be able to stop imports for its urban population.

The female extension service concept should be changed from a service which deals with home economics. The female extension service should be composed of women who have been trained in agriculture primarily and nutrition.

If improvement of nutrition in rural areas is to be a reality, the section of the Community Development Department which deals with nutrition should be integrated into the extension service, both female and regular extension. All extension staff, whether male or female, should have nutrition education.

Farm Institute and Farmer Training Centers would

make a valuable contribution to farmer education if they were functioning at full capacity.

All aspects of the policy and finance of the Farm Institutes and Farmer Training Centers should be clarified.

If extension personnel from the Provincial level on down to the camp level are to function properly, they should be accountable to the farmers.

Village productivity and ward development committees which are not active should be activated. However, their membership should be rotating to avoid stratification and patronage problems.

Research staff who are at present only responsible to the headquarters in Lusaka should be made responsible to the farmers.

Funds should be made available for transport, including vehicles and petrol for all staff starting with the camp staff.

The youth extension system should be evaluated and revised. Consideration should be given to a total merger into the new Ministry of Youth. There is at present an enormous tragedy in the making in Zambia with over 100,000 youth who leave primary school every year with no hope of jobs or further training.

Women are excluded from all types of agricultural education in the District. The Party's Womens' League in the Mpika District should confront squarely the cultural

issues which contribute to women not taking part in agricultural education activities.

There should be an admissions quota for females in the extension service, and the Development Plans should reflect the need to fill these quotas.

Recommendations for Further Research

Each of the education methods presently in use by extension and extension training staff should be measured for effectiveness over a period of time by determining what advice farmers actually put to use.

In the course of field research, quite a number of children were encountered who appeared to be malnourished. At no time did we encounter any complaints of starvation or serious food problems. We did, however, hear from one expatriate that there were rumors of food shortages in one of the areas we had just visited. We could not confirm the rumor. Nevertheless, some of the parents, particularly in the vicinity of the Mpika Agricultural Camp, were comparatively well off and were close to medical facilities. Since we cannot attribute the apparent malnutrition to starvation, it may have been ignorance. There were rumors that those farmers in the vicinity of Mpika were replacing traditional foods with purchased processed foods which have minimal nutritional value.

From the question addressed to farmers and

extension as to whether or not farmers' way of life was improving or static or declining, we can see that things are clearly not improving. We also asked a number of questions about sources of help and assistance for farming. A number of farmers indicated that in order to get neighbors to help it was necessary to brew beer. The following conversation illustrates the situation.

Beer as Payment

Question: Why the beer? (This means why do you have to brew beer.)

Answer: In the past, people helped.

Question: Why not now?

Answer: Don't know. Guess it's now money or food problems.

The question of nutrition should be investigated. Are farmers substituting cash crops for traditional subsistence crops which were more nutritious?

The relationship of the extension staff to the farmers needs to be investigated. The results of this study provide only hints that there is a problem and only hint at the nature of the problem. The following tables (83 and 84) illustrate the problem.

From Table 83 we see that 51% of the farmers rely on themselves and together with neighbors and friends the total is 67%, whereas only 33% think extension staff help them with agricultural problems.

TABLE 83

FARMERS AND EXTENSION STAFF OPINIONS ON WHO HELPS FARMERS WITH AGRICULTURAL PROBLEMS
Ext. N: 36
Farmers N: 62

Responses	%	Total Ext. Staff	Extension		Farmers			Total Farmers
			M	F	%	M	F	
Farmers: himself or herself	3%	1	-	1	51%	17	11	28
Agric. Ext. Staff	97%	31	27	4	33%	10	8	18
Relatives, Friends, Neighbors	-	-	-	-	16%	2	7	9
Not asked or Other	11%	4	4	-	11%	4	3	7

TABLE 84

DO FARMERS THINK THE EXTENSION SERVICE STAFF UNDERSTAND THEIR PROBLEMS

Farmers	Yes	Percentage	Yes	Percentage	Not Asked
Male	22	65%	8	32%	3
Female	12	35%	17	68%	-
Total Both	34	-	25	-	3
Total Percentage	58%	-	42%	-	5%

In Table 84 we see that male farmers think extension staff understand their problems, but females do not concur. This is probably because the extension staff talk mainly to the men. Nevertheless, the two tables indicate that farmers do not have particularly high regard for extension staff.

It would be useful if a study would be done of the budget for the Farm Institutes and Farmer Training Centers to determine if it is adequate for them to function. At present the excuse given for their underutilization is that the budgeted funds are not released. If the funds were released, would the institutes and centers in fact be able to function?

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A P P E N D I X I

INTERVIEW SCHEDULES

A. FARMERS

B. CHILDREN

C. EXTENSION PERSONNEL

D. EXTENSION TRAINING PERSONNEL

E. MPIKA COLLEGE OF AGRICULTURE STAFF

F. PROVINCIAL AGRICULTURAL OFFICERS

Interview Schedule A. Farmers

Date: _____

A STUDY OF

AGRICULTURAL EDUCATION OF THE SMALL FARMER IN ZAMBIA

1. BACKGROUND

1.01 Name _____ 1.02 Head of Household

1. Yes ___ 2. No ___

1.03 Male ___ Female ___

1.04 Village _____ 1.05 Tribe _____

1.06 Chief _____ 1.07 District _____

1.08 Age ___ 1.09 Marital Status _____

1. Single
2. Married
3. Separated
4. Divorced
5. Widowed

1.10 Level of Education _____

1. Sub-Standard A to Standard 2 (Grades 1-4)
2. Standard 3 to Standard 6 (Grades 5-7)
3. No formal school
4. Form 1 and 2
5. Form 3 to 5

1.11 Where educated _____

1.12 Can read and write 1. Yes ___ 2. No ___

1.13 Number of resident children ___ Males ___ Females ___

1.14 Are any of your children members of a Young Farmers Club or school production unit? 1. Yes ___ 2. No ___

1.15 How many people do you feed in your household? ___

1.16 What type of farmer are you? _____

1.17 What type of farmer would you like to be? _____

1.18 Do you know how much land you are using for your crops? (estimate as closely as possible) _____

1.19 What year did you first hear of hybrid maize? _____

1.20 Are you using it? 1. Yes ___ 2. No ___

1.21 If so, why? _____

If not, why not? _____

1.22 Are you afraid to grow more maize than your neighbours?

1. Yes ___ 2. No ___

1.23 Do you try hybrid seeds or new practices before your neighbours or after you see how they succeed with the new seeds and practices?

1. Try first ___ 2. Wait to see ___

1.24 How many do you have of each of the following

Livestock/ Poultry	Number (specify)	PURPOSE (1. Yes / 2. No) Food	Enough?	Sale/Barter	Enough?
Cattle	___	___	___	___	___
Goats	___	___	___	___	___
Pigs	___	___	___	___	___
Chickens	___	___	___	___	___
Oxen	___	___	___	___	___
Other (specify)	___	___	___	___	___

1.25 Which field and garden crop did you grow during 1979?

Crop	1. Yes 2. No (specify)	PURPOSE Food	Enough?	Sale/Barter	Enough?	How many bags/boxes
Maize	___	___	___	___	___	___
Hybrid M.	___	___	___	___	___	___
Millet	___	___	___	___	___	
Sorghum	___	___	___	___	___	
Cassava	___	___	___	___	___	
Rice	___	___	___	___	___	___
Beans	___	___	___	___	___	
Pumpkin	___	___	___	___	___	
Groundnuts	___	___	___	___	___	___
Sweet potato	___	___	___	___	___	___
Irish potato	___	___	___	___	___	___
Vegetables (tomato, rape, onions, cabbage)	___	___	___	___	___	
Cotton	___	___	___	___	___	
Tobacco	___	___	___	___	___	
Soyabeans	___	___	___	___	___	___
Bananas	___	___	___	___	___	
Citrus fruit	___	___	___	___	___	
Local fruit (mango, guava)	___	___	___	___	___	

1.26 What was your estimated income from animals/poultry/crops in 1979? K _____

1.27 Do you have or use any of the following

Item/Practice	owned	borrowed	hired	how many?
Hoe	___	___	___	___
Axe	___	___	___	___
Radio	___	___	___	___
Plough	___	___	___	___
Scotch cart	___	___	___	___
Bicycle	___	___	___	___
Sledge	___	___	___	___
Oxen	___	___	___	___
Hired labour for stumping/planting/harvesting	1. Yes ___ 2. No ___			

Specify: _____

Chitemene garden	Yes/No ___	
Home garden	Yes/No ___	1. Yes
Field crop plots	Yes/No ___	2. No
Hybrid seeds	Yes/No ___	
Rotation	Yes/No ___	
Fertilizer	Yes/No ___	
Manure	Yes/No ___	

1.28 Have you ever applied for an AFC loan? ___ 1. Yes

If yes, for how much? K _____ 2. No

If yes, for what purpose? _____

Have you ever had an AFC loan? 1. Yes ___ 2. No ___

Have you ever had a visit from an AFC agent? 1. Yes ___ 2. No ___

II. AGRICULTURAL EDUCATION METHODS AND CONTENT (A. Farmer)

2.01 Assistance or advice with respect to agriculture during 1979

Type of Advice or Assistance	Source of Advice	Location advice received	Number of times 1979
Hybrid maize			
Maize			
Sunflower			
Soyabeans			
Tobacco			
Cotton			
Cassava			
Rice			
Millet			
Sorghum			
Groundnuts			
Beans			
Sweet potato			
Irish potato			
Vegetables (rape, tomatoes, onions, cabbage)			
How to get credit or loans			
Advice about marketing			
Advice about seeds, fertilizers and insecticides			
Advice about storage			
Advice about management and planning			
Home economics (child care, nutrition)			
Health care			

2.01 contd.

Type of Advice or Assistance	Source of Advice	Location advice received	Number of times 1979
Advice to grow more			
Advice on alternative crops to grow			
Citrus fruits			
Bananas			
Cattle (raising, dipping, vaccinating)			
Oxen			
Dairy cattle			
Pigs			
Goats			
Poultry			
General extension advice (Lima programme, ploughing, planting, harvesting techniques)			
Advice on government agricultural policy			
Help with questions and problems			
Other (specify)			

Source of Advice:

1. Commodity demonstrator
2. Agricultural Assistant
3. Veterinary Officer
4. Female Extention
5. Health Inspector/Asst.
6. Neighbour/friends
7. Radio
8. Party Official
9. Specialist Officer
10. Community Development Officer
11. Credit/Loan Officer
12. Marketing Officer
13. Other (specify)

1. On the farm
2. At home
3. At camp
4. At village
5. Other (specify)

2.02 If you could choose any type of advice or assistance with respect to crops you are growing or crops and livestock you would like to have and to grow, which types of knowledge, techniques and skills, inputs and uses would you choose?

	Actual crops/ animals/poultry kept or raised	Crops/animals/ poultry would like to keep or raise	Knowledge	Techniques and Skills		
					Uses	Inputs
Maize						
Hybrid maize						
Sunflower						
Soyabeans						
Tobacco						
Cotton						
Groundnuts						
Cassava						
Millet						
Sorghum						
Beans						
Rice						
Sweet potato						
Irish potato						
Vegetables (rape, tomatoes, onions, cabbage)						
Bananas						
Citrus fruit						
Cattle						
Oxen						
Dairy cattle						
Pigs						
Goats						
Poultry						
Other (specify)						

2.02 contd. Key to possible answers to p. 6

Actual crops/desired crops
Livestock or poultry

1. Yes
2. No

Knowledge

1. Farm planning & management
2. How to get loans
3. How to get credit
4. How to identify pests and diseases
5. How to plough with oxen
6. How and when to plant rotate and fertilize
7. How to irrigate
8. Other (specify)

Uses

1. Food
2. Cash
3. Barter
4. Improves chance for credit
5. Improves chance for AFC loan
6. Increases self-sufficiency
7. Gains improved farmer status
8. Other (specify)

Skills and Techniques

1. Using insecticides & herbicides
2. Recommended rotation, fertilization and planting techniques
3. Ploughing techniques
4. Using irrigation
5. Storing crops
6. Poultry keeping
7. Cattle keeping
8. Other (specify)

Inputs

1. Hybrid seeds
2. Fertilizer
3. Insecticide/herbicide
4. Credit
5. Loans
6. Hoe/axe
7. Plough
8. Marketing facilities
9. More land
10. More labour
11. Dipping
12. Vaccinations (cattle, poultry)
13. Feeds for poultry, pigs, etc.
14. Other (specify)

2.03 Have any of these helped in the past with your agriculture?

Educational Sources Methods and Techniques	Have helped in 1979 A lot	A little	No help	If available would help A lot	A little	No help
Farm Institute/Farmer Training Centre	___	___	___	___	___	___
Field Days	___	___	___	___	___	___
Demonstrations	___	___	___	___	___	___
Agricultural Shows	___	___	___	___	___	___
Bemba Radio Farm Forum and Farm Notebook	___	___	___	___	___	___
English Radio Farm Forum and Rural Notebook	___	___	___	___	___	___
Posters	___	___	___	___	___	___
Booklets/leaflets/ magazines English	___	___	___	___	___	___
Bemba	___	___	___	___	___	___
Community Development Programme (literacy, agriculture, child care)	___	___	___	___	___	___
Party Committee	___	___	___	___	___	___
Village Productivity Committee	___	___	___	___	___	___
Cooperative Personnel	___	___	___	___	___	___
Local School Personnel	___	___	___	___	___	___
Mission/Church Personnel	___	___	___	___	___	___
Neighbours/friends	___	___	___	___	___	___
Specialist Extension (poultry, cattle, horticulture)	___	___	___	___	___	___
Research Station Personnel	___	___	___	___	___	___
Veterinary Assistants	___	___	___	___	___	___
Health Assistants	___	___	___	___	___	___
General Extension visits to the farm or home	___	___	___	___	___	___
General extension visits by farmers to the village/camp	___	___	___	___	___	___
Other (specify)	___	___	___	___	___	___

2.04 Which of the following educational methods are helpful or not helpful for learning

Method		Very useful	Useful	Not very useful	Useless	Reason
Discussion between two people		___	___	___	___	___
Lecture method		___	___	___	___	___
Listening to the radio		___	___	___	___	___
Group discussion		___	___	___	___	___
Demonstration		___	___	___	___	___
Film and Slide Shows	Bemba	___	___	___	___	___
	Engl.	___	___	___	___	___
Reading Materials/ Posters	Bemba	___	___	___	___	___
	Engl.	___	___	___	___	___
Other (specify)		___	___	___	___	___

Reasons:

1. Learn more because practical
2. More flexible/relaxed
3. Entertaining
4. Leads to chances for more education
5. Stiff and uncomfortable
6. Other (specify) _____

2.05 Do you need to be able to read and write in order to improve and increase your farming knowledge and practices?

Read and Write - Bemba ___
Read and Write - Engl. ___

1. Yes
2. No
3. Don't know
4. Other (specify) _____

If yes, why? _____

If no, why? _____

III. LOGISTICAL AND ORGANISATIONAL FACTORS AFFECTING AGRICULTURAL EDUCATION (A. Farmers)

3.01 If you had your choice of agricultural advice or an education programme, where would you like them to take place, for what length of time, and during what time of year?

Types of Programmes	Length of Programmes	How many times a year?	Places for Programmes	Months of year for Programmes (fill in)
Commodity Demonstrator	___	___	___	___
Agricultural Asst.	___	___	___	___
Specialist Officer (poultry, Cattle, etc)	___	___	___	___
Farm Institute	___	___	___	___
Farmer Training Centre	___	___	___	___
Demonstration	___	___	___	___
Field Day	___	___	___	___
Agricultural Show	___	___	___	___
Community Devel. Worker	___	___	___	___
Lima Programme	___	___	___	___
Health Officer	___	___	___	___

1. 1 hr or less	1. once	1. On the farm
2. 1-2 hours	2. twice	2. In the village
3. ½ day	3. 3-5 times	3. At Agricult. Camp
4. 1 day	4. 5-10 times	4. At Farm Institute
5. 1 week	5. Other	5. At Farm Train. Ctr.
6. 2 weeks		6. At Agric. College/ Mpika
7. 2 weeks - 1 month		7. At home
8. 1-6 months		8. Other
9. 6 months - 1 yr.		

3.02 If you (your wife/husband, sons, daughters, other relatives) do not attend residential programmes, demonstrations, field days or agricultural shows, or make use of materials, what do you think are the reasons?

	Wife	Husband	Sons	Daughters	Relations who are part of household
Residential Programme like Farm Institute or Farmer Training Centre					
Field Days					
Demonstration					
Agricultural Show					
Village Productivity Committee meetings					
Radio programmes: Farm Forum/Farm Notebook					
Posters/reading material					
Other (specify)					

Possible Reasons:

1. Not interested
2. No transport
3. Not invited
4. No posters/material available
5. Other duties (household, school, etc)
6. Can't spare time from farm
7. Don't have radio
8. Can't afford to
9. Programmes don't exist

3.03 If Commodity Demonstrators, Agricultural Assistants, Specialist Officers (cattle, dairy, pigs, poultry, horticulture, etc.), Female extension and research officers do not visit subsistence farmers, what are possible reasons?

Reasons	Feel strongly	Not strong but a reason	Possibly a reason
Lack of knowledge relevant to subsistence farmers			
Too many farmers and too few staff			
Lack of interest in subsistence farmers			

3.03 contd.

Reasons	Feel strongly	Not strong but a reason	Possibly a reason
More important to spend time with emergent farmers	___	___	___
Lack of transport	___	___	___
Lack of implements and inputs	___	___	___
Other (specify)	___	___	___

IV. GOVERNMENT POLICY AND FINANCE FACTORS AFFECTING AGRICULTURAL EDUCATION (A. Farmers)

4.01 Do you think the following explain Government policy for agricultural and rural development?

Grow more and better crops	___	1. Yes
Eliminate poverty	___	2. No
Improve health and nutrition	___	3. Don't know
Make the nation stronger	___	
Make the village better	___	
Make the district better	___	
Make the province better	___	
Help people to be self-reliant	___	

4.02 Do you think that the Government provides enough funds or support for (explain fully):

Extension personnel	___	1. Yes
Reading materials/posters	___	2. No
Female extension personnel	___	3. Don't know
Community Development personnel	___	
Radio Farm Forum	___	
Health assistants	___	

4.03 At present, how would you rank your need for each of the following

Needs	Most important	Somewhat important	Not very important
Credit/AFC Loan	___	___	___
Fertilizers/seeds/ Insecticides	___	___	___
Marketing facilities	___	___	___
Extension services/advice	___	___	___
Farm Institute/Farmer Training College	___	___	___
Better prices	___	___	___
Other business activity	___	___	___

4.04 If the Government had more money, what should they use it for?

	Most important	Somewhat important	Not very important	Don't know
More extension workers	___	___	___	___
More Farmer Training Centre programmes	___	___	___	___
More Farm Institute programs	___	___	___	___
More radio programmes in Bemba devoted to Agriculture	___	___	___	___
More radio programmes in English devoted to Agricult.	___	___	___	___
More reading materials on agricultural subjects	___	___	___	___
More specialist officers for extension: poultry	___	___	___	___
beef/dairy	___	___	___	___
More veterinary and pest control advice	___	___	___	___
More Community Development Officers	___	___	___	___
More Home Economics	___	___	___	___
More Farm Planning and management	___	___	___	___

4.04 contd.

	Most Important	Somewhat Important	Not very Important	Don't know
Improved roads	___	___	___	___
Making more AFC loans avail.	___	___	___	___
Better prices	___	___	___	___
Better marketing facilities	___	___	___	___
Electricity	___	___	___	___
Schools	___	___	___	___
Clean water	___	___	___	___
Seeds/fertilizers/insecticides	___	___	___	___

V. GENERAL OPEN-ENDED QUESTIONS (A. Farmers)

5.01 Is your farming a way of life or a business? _____

5.02 Is your self-sufficiency in food improving or declining?

_____

5.03 If you could choose another occupation, what would you like to do? _____

5.04 What level of education would you like your children to reach?

_____

5.05 What would you like your children to have as occupation?

_____

5.06 If you could go to formal school (primary, secondary, technical college, university), what would you study?

_____

5.07 What does agricultural development mean for the nation/Zambia as a whole? _____

_____

5.08 Have you heard of the Lima Programme? What is it? (explain in detail) _____

_____

5.09 Do you think that the extension services understand your problems?

Yes ____ No ____

5.10 When you have a problem with agriculture, who helps you the best in trying to solve it? _____

5.11 If you had K 5,000 to invest, which of the following would you buy?

tractor	____	1. Yes
fertilizer	____	2. No
seeds	____	
livestock	____	
better house	____	
citrus trees	____	
well/borehole	____	
education	____	
grinding mill	____	
food	____	
bicycle	____	
poultry	____	
plough	____	
Other (specify)	_____	

5.12 Success in growing maize depends on _____

1. planting timing	____	8. pesticides	____
2. hybrid seed	____	9. good fortune	____
3. ridging	____	10. spacing	____
4. hard work	____	11. Other (specify)	____
5. fertilizer	____		
6. money	____		
7. medicine	____		

Interview Schedule B. Children

VI. AGRICULTURAL EDUCATION - CHILDREN OF FARMERS (B. Children)

6.01 Name _____ 6.02 Male ... Female ... 6.03 Age _____

6.04 What does your father do? _____

6.05 What does your mother do? _____

6.06 Do you live with your parents? 1. Yes ___ 2. No ___

6.07 How long have you lived in this area? _____

6.08 Are you in school? 1. Yes ___ 2. No ___ 6.09 What level? _____

6.10 How long do you want to continue in school? _____
(specify Grade or Form)

6.11 What subject(s) do you want to study? _____

6.12 How do you learn about farming?

Radio Bemba/English	___	1. Yes
School production unit	___	2. No
Church/mission	___	
Scouts	___	
Girl Guides	___	
Young Farmers Club	___	
Parents	___	
Teachers in school	___	
Extension workers	___	
Friends	___	
Working in the garden/field	___	

6.13 When you grow up, would you like to be

a farmer	___	1. Yes
an agricultural extension officer	___	2. No
a training officer	___	3. Don't know
a commercial farmer	___	
a district agricultural officer	___	
an office worker	___	
other (specify)	___	_____

6.14 When you are learning something outside school or in school, what method is the best for learning?

Asking questions and hearing the answers	___	1. Yes
Having the teacher lecture to the class	___	2. No
Listening to the radio Bemba/English	___	3. Don't know
Reading materials Bemba/English	___	
Looking at pictures	___	
Watching films or slides Bemba/English	___	
Learning by working or doing	___	
Demonstration	___	
Group discussion	___	

Interview Schedule C. Extension Personnel

Date: _____

A STUDY OF

AGRICULTURAL EDUCATION OF THE SMALL FARMER IN ZAMBIA

I. BACKGROUND (C. Extension Personnel)

7.01 Name _____ 7.02 Job Title _____

7.03 Sex: 1. Male ... 2. Female ...

7.04 Age ____

7.05 Length of time in present position: _____

7.06 Job base or location _____

1. Farm Institute
2. Farmer Training Centre
3. Agricultural Camp (specify)
4. District Office (specify)
5. Provincial Office (specify)
6. Research Station
7. Headquarters
8. Other (specify)

1. Agricultural Assistant
2. Commodity Demonstrator
3. District Agricultural Officer
4. Provincial Agricultural Officer
5. Youth Extension Officer
6. District Planning Officer
7. Specialist Officer (poultry, pigs, cattle, dairy, citrus, trees)
8. Female Extension Officer
9. Agricultural Research Officer
10. Community Development Officer
11. Other (specify)

7.07 Do you have a written job description? 1. Yes ___ 2. No ___

7.08 Previous work experience _____

_____

7.09 Formal education _____

1. Primary school
2. Forms 1-2
3. Forms 3-5
4. N.R.D.C. diploma
5. Agricultural College dipl. (Mpika/Monze)
6. UNZA Agriculture degree
7. Other (specify)

7.10 What is your field(s) of specialisation? _____

7.11 What job do you want to be doing in 10 years' time? _____

7.12 Is extension work a career?

1. Yes ___ 2. No ___

If not, why not? _____

7.13 Non-formal education ____

1. In-service training
2. Farm Institute programme (specify)
3. Farmer Training Centre Programme (specify)
4. Other (specify)

7.14 How many subsistence farmers do you visit each month? _____

7.15 How many emergent farmers? ____

7.16 How many commercial farmers? ____

7.17 How many farmers are you responsible for in your camp area? ____

7.18 Have you had enough training? 1. Yes __ 2. No __

7.19 If No, what type of training would you like to have? _____

_____

7.20 What is your first language? _____

7.21 From the time a subsistence farmer first hears about hybrid maize, how long do you think it is before he/she accepts it?

7.22 If subsistence farmers decide against growing hybrid maize, why do you think this happens? _____

7.23 Are subsistence farmers afraid to grow more maize than their neighbours? 1. Yes ___ 2. No ___

7.24 If yes, why? _____

II. AGRICULTURAL EDUCATION METHODS AND CONTENT

8.01 With respect to extension services for subsistence farmers, how do you rank each of the following in terms of your own job description?

Type of Advice/ Assistance	First Priority	Part of job but not a priority	Not in Job Description could be useful	not useful	Responsibility of another person/dept. (specify)
Hybrid Maize	___	___	___	___	_____
Maize	___	___	___	___	_____
Sunflower	___	___	___	___	_____
Soyabeans	___	___	___	___	_____
Tobacco	___	___	___	___	_____
Cotton	___	___	___	___	_____
Rice	___	___	___	___	_____
Cassava	___	___	___	___	_____
Millet	___	___	___	___	_____
Sorghum	___	___	___	___	_____
Groundnuts	___	___	___	___	_____
Beans	___	___	___	___	_____
Sweet potato	___	___	___	___	_____
Irish potato	___	___	___	___	_____
Vegetables (onions, tomatos, cabbage, rape)	___	___	___	___	_____
Identification and finding solutions to farmer-problems	___	___	___	___	_____
Helping farmers to get credits/loans	___	___	___	___	_____

EXTENSION PERSONNEL - 3 -

8.01 contd.

Type of Advice/ Assistance	First Priority	Part of Job but not a priority	Not in Job Description: could be useful	Not in Job Description: not useful	Responsibility of another person/dept. (specify)
Explain gov't agr. policy to farmers	___	___	___	___	___
Helping farmers with marketing	___	___	___	___	___
Helpinf farmers to find & use seeds, fertiliz. & insecticides	___	___	___	___	___
Helping farmers with storage techniques	___	___	___	___	___
Farm management & planning techniques	___	___	___	___	___
Identifying leaders among farmers to help with spreading new techniques	___	___	___	___	___
Self/help housing techniques	___	___	___	___	___
Home economics (nutrition etc)	___	___	___	___	___
Health care/ first aid	___	___	___	___	___
Encouragement to produce more	___	___	___	___	___
Advice on alternative crops to try	___	___	___	___	___
Citrus trees	___	___	___	___	___
Bananas	___	___	___	___	___
Cattle	___	___	___	___	___
Oxen f. ploughing	___	___	___	___	___
Dairy cattle	___	___	___	___	___
Pigs	___	___	___	___	___
Goats	___	___	___	___	___
Poultry	___	___	___	___	___
General extension (ploughing, planting, harvesting) techniques, e.g. Lima Programme)	___	___	___	___	___

EXTENSION PERSONNEL - 4 -

8.01 contd.

Type of Advice/ Assistance	First Priority	Part of job but not a priority	Not in job description could be useful	Not in job description not useful	Responsibility of another person/dept. (specify)
Teaching a farmer a method and following up with weekly or monthly visits	___	___	___	___	___
Other (specify)	___	___	___	___	___

Other Departments/Persons:
1. Commodity Demonstrator
2. Agricultural Assistant
3. Veterinary Officer
4. Specialist Officer (pigs, poultry, cattle)
5. Female Extension Officer
6. Community Development Officer
7. Health Inspector/Assistant
8. Party Official
9. Credit/Loan Officer
10. Marketing Officer
11. Neighbours/friends
12. Other (specify) _____

8.02 If farmers could choose any type of advice or assistance with respect to crops, poultry and animals they are growing or would like to have/grow, which types of knowledge; techniques and skills; inputs; and uses would they choose?

	Actual crops/ animals/poultry kept or raised by subs. farmers	Crops/animals/ poultry which subs. farmers might like to raise or use	Knowledge	Techniques & Skills	Inputs	Uses
Hybrid Maize	___	___	___	___	___	___
Maize	___	___	___	___	___	___
Sunflower	___	___	___	___	___	___
Soyabeans	___	___	___	___	___	___
Tobacco	___	___	___	___	___	___
Cotton	___	___	___	___	___	___
Groundnuts	___	___	___	___	___	___
Cassava	___	___	___	___	___	___
Millet	___	___	___	___	___	___
Sorghum	___	___	___	___	___	___

EXTENSION PERSONNEL - 5 -

8.02 contd.

	Actual crops/ animals/poultry kept or raised by subs. farmers	Crops/animals/ poultry which subs. farmers might like to raise or use	Knowledge	Techniques & Skills	Inputs	Uses
Beans	___	___	___	___	___	___
Rice	___	___	___	___	___	___
Sweet potato	___	___	___	___	___	___
Irish potato	___	___	___	___	___	___
Vegetables (rape, tomatos, onions, cabbage)	___	___	___	___	___	___
Bananas	___	___	___	___	___	___
Citrus fruit	___	___	___	___	___	___
Cattle	___	___	___	___	___	___
Oxen	___	___	___	___	___	___
Dairy cattle	___	___	___	___	___	___
Pigs	___	___	___	___	___	___
Goats	___	___	___	___	___	___
Poultry	___	___	___	___	___	___
Other (specify)	___	___	___	___	___	___

Actual/Desired:
1. Yes
2. No
3. Don't know

Skills and Techniques:

1. Using insecticides and herbicides
2. Recommended rotation and fertilization
3. Ploughing & planting techniques
4. Using irrigation
5. Storing crops
6. Keeping poultry
7. Keeping cattle
8. Other (specify) _____

Uses:

1. Food
2. Cash
3. Barter
4. Improves chances for credit
5. Improves chances for AFC loan
6. Increases self-sufficiency
7. Improved farmer status
8. Other (specify) _____

Knowledge:

1. Farm planning and management
2. How to get loans
3. How to get credit
4. How to identify pests & diseases
5. How to plough with oxen
6. How and when to plant, rotate and fertilise
7. How to irrigate
8. Other (specify) _____

Inputs:

1. Hybrid seeds
2. Fertilizer
3. Insecticide/herbicide
4. Credit
5. Loans
6. Hoe
7. Plough
8. Marketing facilities
9. Feeds (poultry, pigs, etc.)
10. More land
11. More labour
12. Dipping
13. Vaccinations (cattle, poultry, etc)
14. Other (specify) _____

EXTENSION PERSONNEL - 6 -

8.03 Which of the following agricultural education sources, methods and techniques have helped subsistence farmers and their children in the past, or would help them if they were available?

Sources/Methods/ Techniques	Have helped during 1979 A lot	A little	No help	Would help if available A lot	A little
Farm Institute	___	___	___	___	___
Farmer Training Centre	___	___	___	___	___
Field Day	___	___	___	___	___
Demonstration	___	___	___	___	___
Agricult. Show	___	___	___	___	___
Radio Farm Forum & Farm Notebook:					
Bemba	___	___	___	___	___
English	___	___	___	___	___
Booklets, leaflets megazines:					
Bemba	___	___	___	___	___
English	___	___	___	___	___
Posters	___	___	___	___	___
General extension visits to home/ farm	___	___	___	___	___
School Prod. Unit	___	___	___	___	___
Young Farmers Club	___	___	___	___	___
General extension visits to agric. camp/village by farmers	___	___	___	___	___
Frequent follow-up visits to farmers after they have attended a course or demonstration	___	___	___	___	___
Visits to farmers by Community Dev. assistants	___	___	___	___	___
Village productivity committee	___	___	___	___	___
Coop. personnel	___	___	___	___	___
Health assists.	___	___	___	___	___
Specialist extension personnel (cattle, poultry, horticulture)	___	___	___	___	___

EXTENSION PERSONNEL - 7 -

8.03 contd.

Sources/Methods/ Techniques	Have helped during 1979 A lot	A little	No help	Would help if available A lot	A little
Research Station personnel	___	___	___	___	___
Mission personnel Church groups	___	___	___	___	___
Veterinary Assistants	___	___	___	___	___
Neighbours/ relatives	___	___	___	___	___
School personnel	___	___	___	___	___
Other (specify)	___	___	___	___	___

1. Yes 2. No 3. Don't know

8.04 Which of the following educational methods are most useful or useless in educating subsistence farmers?

Method	Very useful	Useful	Not very useful	Useless	Reasons
Discussion between 2 people	___	___	___	___	___
Lecture	___	___	___	___	___
Demonstration	___	___	___	___	___
Listening to Radio: Bemba	___	___	___	___	___
English	___	___	___	___	___
Group discussion	___	___	___	___	___
Programmes where people stay for 1 or 2 weeks (as at F.I. or F.T.C.)	___	___	___	___	___
Films or slide shows: Bemba	___	___	___	___	___
English	___	___	___	___	___
Reading materials/ posters: Bemba	___	___	___	___	___
English	___	___	___	___	___
In-service training	___	___	___	___	___
Other (specify)	___	___	___	___	___

EXTENSION PERSONNEL - 8 -

8.04 contd.

KEY TO ANSWER: Reasons:
1. Learn more because practical
2. Entertaining
3. More flexible/relaxed
4. Stiff/uncomfortable
5. Leads to more education
6. Other (specify) _____

8.05 Does a subsistence farmer need to be able to read and write to improve farming knowledge and practices?

Read and write Bemba ____
Read and write English ____

1. Yes
2. No
3. Don't know
4. Other (specify) _____

If yes, why? _____

If no, why not? _____

III. LOGISTICAL AND ORGANIZATIONAL FACTORS AFFECTING AGRICULTURAL EDUCATION

CAMP STAFF

9.01 Do you have programmes or plans for daily work with farmers? ____

1. Yes ___ 2. No ___

9.02 If yes, who prepares your daily work plan? ____

9.03 Who decides the subjects of programmes on which you work with farmers? ____

1. Headquarters staff
2. District staff
3. Provincial staff
4. Self
5. Other (specify) _____

9.04 Are you involved in any aspect of deciding on which subjects to work with farmers? 1. yes ___ 2. no ___

9.05 Is your involvement mainly limited to implementation?

1. Yes ___ 2. No ___

9.06 If yes, do you have specific instructions for your role in implementation? 1. Yes ___ 2. No ___

9.07 Who evaluates your work with farmers? ____ (see above for key)

9.08 What proportion of your time is actually spent talking to farmers? ___

1. ¼ or less 2. ¼ to ½ 3. ½ or more

9.09 What is the average distance to the nearest farmers? _____

9.10 What is the average distance to those farthest away? _____

EXTENSION PERSONNEL - 9 -

ALL STAFF

9.11 How many supervisors do you have? ____

9.12 To whom do you report? ____
If there are more than one person, specify:
_____

1. Agricultural Assistant
2. Commodity Demonstrator
3. District Agricultural Officer
4. Provincial Agricultural Officer
5. Headquarters staff
6. Drivers
7. Secretaries
8. Other (specify) _____

9.13 Who reports to you? ____

STAFF EXCLUDING CAMP STAFF

9.14 Who decides on types of programmes to be implemented by camp staff? ____

9.15 Who decides on the daily work plans of camp staff? ____

1. Commodity Demonstrator
2. Agricultural Assistant
3. District Agricultural Officer
4. Provincial Agricultural Officer
5. Headquarters staff
6. Other (specify) _____

9.16 Do you give specific instructions to staff on their role in implementing programmes?

1. Yes ___ 2. No ___

9.17 How many of your staff are actually involved in direct extension work with the farmer? ____ (specify number)

9.18 Is this number of farmers reached adequate? 1. Yes ___ 2. No ___

9.19 Recommended solution: ____

1. reduce ratio of farmers to staff
2. increase staff
3. better training of staff
4. better administration and logistic support
5. better planning
6. Other (specify) _____

9.20 Contact (cooperation and coordination) with other agencies which extension staff are likely to have

	C.D.s	A.A.s	D.A.O.s	(specify) Other	Training staff
Community Devel. Off.	___	___	___	___	___
Research Station Off.	___	___	___	___	___
Health Inspectors/Assts.	___	___	___	___	___
Party Committee	___	___	___	___	___
Veterinary Staff	___	___	___	___	___
Cooperative Staff	___	___	___	___	___
Agricultural Credit or AFC Loan staff	___	___	___	___	___
Census takers	___	___	___	___	___

EXTENSION PERSONNEL - 10 -

9.20 contd.

	C.D.s	A.A.s	D.A.O.s	Other	Training staff
Primary/secondary school staff	___	___	___	___	___
Crop forecasters	___	___	___	___	___

9.21 How much of your time do you devote to the following:

	Hours per week	Adequate? Yes	No
Conducting demonstrations	___	___	___
Supervising staff	___	___	___
Conducting Field Days	___	___	___
Working with F.I. or F.T.C. staff on follow-up activities for their programme participants	___	___	___
Writing reports	___	___	___
Evaluating programmes	___	___	___
Office administration	___	___	___
Talking to individual subsistence farmers	___	___	___
emergent farmers	___	___	___
commercial farmers	___	___	___
Travelling	___	___	___
Attending official meetings	___	___	___
Funerals and other social obligations	___	___	___
Sickness	___	___	___
Attending refresher courses or other educational programmes	___	___	___

9.22 Does labour supply influence whether or not farmers adopt new policies? ___ 1. Yes 2. No 3. Don't know

Farmers are too old to provide enough labour for their farms ___

If yes, in how many cases? ___

Labor is available if a farmer has the money ___

There is usually a seasonal shortage of labour ___

Does the extension service provide any advice on labour problems?

___

1. Yes 2. No 3. Don't know

EXTENSION PERSONNEL - 11 -

9.23 What are the objectives or purposes of

Ministry of Agricultural and Water Development ____
District Office ____
Provincial Office ____
Headquarters Office ____
Agricultural Camps ____
Research Sub-Stations ____

1. provide a base for contact with farmers
2. make policy related to extension
3. make plans related to extension
4. coordinate implementation of extension plans
5. implement plans and policies
6. administration
7. Other (specify) _____

9.24 If you could provide subsistence farmers with as much advice and education as they need or want, where would you like them to take place; for what length of time and during what time of year?

Types of Programmes	Length of Programmes	How many times per year	Places for Programmes	Months of year for prog.
General extension work by CDs, AAs or specialist staff	____	____	____	____
Farm Institute or F.T.C. with/without planned follow-up	____	____	____	____
Demonstration	____	____	____	____
Field Day	____	____	____	____
Agricultural Show	____	____	____	____
Community Development Programmes	____	____	____	____
Health Programmes	____	____	____	____

Places for Programmes:
1. On the farm/in the fields
2. In the village
3. At the Agricultural Camp
4. At the Farm Institute
5. At the Farm Training College
6. At the Agriculture College/Mpika
7. At home of farmer
8. Other (specify) _____

9.25 If farmers do not attend the above-mentioned programmes (of q. 9.24) why don't they? Is this also true for their spouses?

Reason:	Most important reason	Somewhat imp. reason	Perhaps a reason	Not a reason
	Husband/Wife	H / W	H / W	H / W
Not interested	__/__	__/__	__/__	__/__
Not invited	__/__	__/__	__/__	__/__
Other duties (household, school, etc.)	__/__	__/__	__/__	__/__
Can't spare time from farm work	__/__	__/__	__/__	__/__
No transport	__/__	__/__	__/__	__/__
Other (specify) _____	__/__	__/__	__/__	__/__

9.26 If extension personnel do not visit subsistence farmers often or regularly, what are possible reasons?

Reason	Feel strongly	Not strong, but a reason	Possibly a reason
Lack of knowledge relevant to subsistence farmers	___	___	___
Too many farmers and too few staff	___	___	___
Lack of interest in subsistence farmers	___	___	___
More important to spend time with emergent farmers	___	___	___
Lack of transport	___	___	___
Lack of implements and inputs for demonstrations	___	___	___
Policy is to try and reach only a percentage of subsistence farmers (specify %)	___	___	___
Other (specify) _____	___	___	___

9.27 What would help you to do your job better?

Reason	1. Yes/2. No	Priority
Better housing	___	___
Transport	___	___
More salary	___	___
Job description	___	___
Clear policy guidelines	___	___
Clean water	___	___

EXTENSION PERSONNEL - 13 -

9.27 contd.

	1. Yes/2. No	Priority
Electricity	___	___
More staff (specify) _____	___	___
Demonstration/ Office equipment	___	___
Schools for children	___	___
Other (specify) _____	___	___

IV. GOVERNMENT POLICY AND FINANCE FACTORS AFFECTING AGRICULTURAL EDUCATION

10.01 What is Party and Government policy for agricultural and rural development?

Agricultural development: _____

_____

_____

Rural development: _____

_____

_____

10.02 Does the Party and Government provide enough funds or support for:

Specialist extension services	___
General extension services	___
Reading materials/posters	___
Female extension services	___
Radio agricultural programmes	___
Health assistance	___
Community Development Personnel	___
Farm Institutes/Farmer Training Centres	___

1. Yes
2. No
3. Don't know

10.03 How would you rank the need of subsistence farmers for each of the following:

Need	Most Important	Somewhat Imp.	Not very Imp.
Credit/AFC loans	___	___	___
Fertilizer/seeds/insecticides	___	___	___
Marketing facilities	___	___	___
Extension services/advice	___	___	___

EXTENSION PERSONNEL - 14 -

10.03 contd.

Need	Most Important	Somewhat Imp.	Not very Imp.
Farm Institute/Farmer Training Centre education programmes	___	___	___
Better prices	___	___	___
Labour	___	___	___
Other (specify) _____	___	___	___

10.04 If the Government had more money, what should they use it for?

More extension personnel ___
More Farmer Training Centre programmes ___
More Farm Institute programmes ___
More radio programmes devoted to agriculture: In Bemba ___
In English ___
More reading materials on agricultural subjects: Bemba ___
English ___
More specialist officers of extension (poultry, beef/dairy, horticulture) ___
More veterinary and pest control personnel and services ___
More Community Development Programmes and services ___
More ploughs and oxen ___
More tractors ___
Improved roads ___
Making more AFC loans available ___
Better prices ___
Better markets ___
Electricity ___
Clean Water ___
Better marketing facilities ___
Seeds/fertilizer/insecticides ___

1. most important
2. somewhat important
3. not very important
4. don't know

EXTENSION PERSONNEL - 15 -

V. GENERAL OPEN-ENDED QUESTIONS

11.01 For subsistence farmers, is self-sufficiency in food improving or declining? _____

11.02 Have you heard of the Lima Programme? 1. Yes ___ 2. No ___
If yes, what is it? _____
_____
_____

11.03 If subsistence farmers have problems, who helps them the best in trying to solve them? _____

11.04 If subsistence farmers were given K5,000 to invest, what do you think they would spend it on?

	1. Yes/2. No	Possible rank of choice
Tractor	___	___
Fertilizer	___	___
Seeds	___	___
Livestock	___	___
Better house	___	___
Citrus fruit	___	___
Well, borehole	___	___
Education	___	___
Grinding mill	___	___
Food	___	___
Bicycle	___	___
Poultry	___	___
Plough	___	___
Hired labour	___	___
Other (specify) _____	___	___

11.05 From the subsistence farmers' point of view, what do you think they attribute success in growing maize ___ millet ___?

1. planting timing
2. hybrid seeds
3. ridging
4. hard work
5. fertilizer
6. money
7. medicine
8. pesticides
9. good fortune
10. spacing
11. Other (specify) _____

EXTENSION PERSONNEL - 16 -

11.06 What factors are most important in your efforts to advise and educate farmers about growing maize?

_____

_____

11.07 Is contact with subsistence farmers

		Priority choice
purely for imparting recommended practices	___	___
educating and training in response to need for a particular skill or knowledge	___	___
directly responsible for starting a new activity	___	___

If yes, specify: _____

1. Yes
2. No

Interview Schedule D: Extension Training Personnel

Date: _____

A STUDY OF

AGRICULTURAL EDUCATION OF THE SMALL FARMER IN ZAMBIA

I. BACKGROUND (D. Extension Personnel: Training Staff - Farm Institute or Farmer Training Centre)

12.01 Name _____ 12.02 Male ___ Female ___

12.03 Age ____ 12.04 Marital Status ____

1. Single
2. Married
3. Separated
4. Divorced
5. Widowed

12.05 What is your first language?

_____

12.06 Level of education ____

1. Sub-standard A to Standard 2 (Grades 1-4)
2. Standard 3 to 6 (Grades 5-7)
3. No formal school
4. Form 1-2
5. Form 3-5
6. NRDC Diploma
7. Agricultural College (Mpika/Monze)
8. UNZA degree
9. Other (specify) _____

12.07 Where were you educated? _____

12.08 Present job title _____

12.09 Do you have a written job description? 1. Yes ___ 2. No ___

12.10 Where are you based?

_____

12.11 Previous work experience: _____

_____

12.12 What is your field(s) of specialisation?

_____

12.13 What job would you like to be doing in ten years' time?

_____

12.14 Why? _____

12.15 Is this work your career? 1. Yes ___ 2. No ___

12.16 If not, why not? _____

12.17 What non-formal training have you had? (specify subject area)

1. In-service training (specify) _____ ____
2. Farm Institute programmes
3. Farmer Training Centre programmes
4. Other (Specify) _____

D. - 2 -

12.18 If you could have more education, what would you choose?

12.19 _____
From the time a subsistence farmer first hears about hybrid maize, how long do you think it takes before he/she adopts it?

_____

12.20 If subsistence farmers decide against growing hybrid maize, why do you think this happens?

12.21 _____
Are subsistence farmers afraid of growing more maize than their neighbours?

1. Yes ___ 2. No ___

12.22 If yes, why? _____

II. EDUCATIONAL METHODS AND CONTENT

13.01 Which of the following educational methods are most useful or useless in educating subsistence farmers?

Method	Very useful	Useful	Not very useful	Useless	Reason
Discussion between two people	___	___	___	___	___
Lectures	___	___	___	___	___
Demonstration	___	___	___	___	___
Listening to radio:					
Bemba	___	___	___	___	___
English	___	___	___	___	___
Group Discussion	___	___	___	___	___
Residential programmes where people spend weeks or months (FIs or FTCs)	___	___	___	___	___
Films or slide shows					
Bemba	___	___	___	___	___
English	___	___	___	___	___
Reading materials/posters					
Bemba	___	___	___	___	___
English	___	___	___	___	___
In-service training	___	___	___	___	___
Other (specify) _____	___	___	___	___	___

Reasons:
1. more flexible/relaxed
2. students retain more
3. stiff/uncomfortable
4. supplements other education
5. reinforces other education
6. Other (specify) _____

D.

13.02 Who prepared the materials you use for teaching? _____

13.03 Are the facilities for preparation of materials adequate?

1. Yes ___ 2. No ___

13.04 If not, why not? _____

13.05 Does a subsistence farmer need to be able to read and write to improve farming knowledge and practices?

Read and write Bemba ___ 1. Yes 3. Don't know

Read and write English ___ 2. No 4. Other (specify)

_____

If yes, why? _____

If no, why not? _____

13.06 Which of the following agricultural education sources, methods and techniques have helped subsistence farmers and their children in the past, or would help them if they were available?

Educational Source/ Method/Technique	Have helped in 1979			Would help if available		
	A lot	A little	No help	A lot	A little	No help
Farm Institute/F.T.C.	___	___	___	___	___	___
Field Days	___	___	___	___	___	___
Demonstrations	___	___	___	___	___	___
Agricultural Shows	___	___	___	___	___	___
Radio Farm Forum/ Notebook: Bemba	___	___	___	___	___	___
English	___	___	___	___	___	___
Posters	___	___	___	___	___	___
Booklets/leaflets/ magazines: Bemba	___	___	___	___	___	___
English	___	___	___	___	___	___
Community Development Programme (literacy, agriculture, child care)	___	___	___	___	___	___
Party Committee	___	___	___	___	___	___
Village Prod. Cttee.	___	___	___	___	___	___
Cooperative Personnel	___	___	___	___	___	___
Local school personnel	___	___	___	___	___	___
Young Farmers Club	___	___	___	___	___	___
School Prod. Unit	___	___	___	___	___	___
Mission/Church Pers.	___	___	___	___	___	___
Neighbours/friends	___	___	___	___	___	___
Specialist extension (poultry, cattle, horticulture)	___	___	___	___	___	___

D. - 4 -

13.06 contd.

Educational Source/ Method/Technique	Have helped in 1979 A lot	A little	No help	Would help if available A lot	A little	No help
Research Station Fers.	___	___	___	___	___	___
Veterinary Assts.	___	___	___	___	___	___
Health Assistants	___	___	___	___	___	___
General extension visits to farm/home	___	___	___	___	___	___
General extension visits by farmers to village/camp	___	___	___	___	___	___
Frequent follow-up visits to farmers after they have attended a course or demonstration	___	___	___	___	___	___
Other (specify)						
_____	___	___	___	___	___	___

1. Yes 2. No 3. Don't know

13.07 What demonstration equipment do you have?

	Type and Quantity
In working order	_____
In need of repair or replacement	_____

Is anything else needed? _____

13.08 What animals do you have for demonstration purposes?

	Quantity	Quantity needed
Oxen - steers	___	___
Bulls	___	___
Cows - heifers	___	___
Calves	___	___
Boars	___	___
Others	___	___
Sows	___	___
Others	___	___
Rams	___	___
Ewes	___	___
Others	___	___

D.

13.08 contd.

	Quantity	Quantity needed
Chickens - hens	___	___
Chickens - cocks	___	___
Chickens - other	___	___
Ducks/turkeys	___	___
Others (specify) _____	___	___

13.09 Attendance by topic and type of student during 1979

Topic	Field Staff (No. att.)			Non-Field Staff (No. att.)				
	T.O.s T.A.s	A.A.s	C.D.s	Subs. Farmers	Emerg. Farmers	Comm. Farmers	Y.F.C.s	Other
Cattle/ dairy	___	___	___	___	___	___	___	___
Pigs	___	___	___	___	___	___	___	___
Sheep/ goats	___	___	___	___	___	___	___	___
Poultry	___	___	___	___	___	___	___	___
Main crops	___	___	___	___	___	___	___	___
Horticult.	___	___	___	___	___	___	___	___
Cotton	___	___	___	___	___	___	___	___
Rice	___	___	___	___	___	___	___	___
Coffee	___	___	___	___	___	___	___	___
Tobacco	___	___	___	___	___	___	___	___
Farm manag.	___	___	___	___	___	___	___	___
Farm plann.	___	___	___	___	___	___	___	___
Extension	___	___	___	___	___	___	___	___
Adult educ. methods	___	___	___	___	___	___	___	___
Home econ.	___	___	___	___	___	___	___	___
Farm equipm.	___	___	___	___	___	___	___	___
Farm Forum	___	___	___	___	___	___	___	___
Y.F. Clubs	___	___	___	___	___	___	___	___
Administr.	___	___	___	___	___	___	___	___
Induction	___	___	___	___	___	___	___	___
Refresher c.	___	___	___	___	___	___	___	___
Crop survey	___	___	___	___	___	___	___	___
Co-operatvs.	___	___	___	___	___	___	___	___
Committees	___	___	___	___	___	___	___	___
Miscell.	___	___	___	___	___	___	___	___

D.

13.10 Courses planned during 1979 ____ (No.)
Courses actually held during 1979 ____ (No.)

13.11 Number of females attending courses during 1979 ____

13.12 Number of males attending courses during 1979 ____

13.13 Attendance number of females and males by topic during 1979

Topic	Males	Females
Cattle/dairy	____	____
Hogs	____	____
Sheep/goats	____	____
Poultry	____	____
Main crops	____	____
Horticulture	____	____
Cotton	____	____
Rice	____	____
Coffee	____	____
Tobacco	____	____
Farm management	____	____
Farm planning	____	____
Extension	____	____
Home economics	____	____
Farm equipment	____	____
Farm Forum	____	____
Administration	____	____
Miscellaneous	____	____

13.14 Reasons for cancellation of courses during 1979: ____

1. no transport
2. no recruiting
3. no water
4. no funds
5. conflicts with other courses
6. refusal of farmers
7. no equipment
8. Other _____

13.15 What improvements would you suggest for courses or their content, and what additional courses would you suggest for F.I.s and F.T.C.s?

_____

_____

1. More effort to match level of participants with level of courses
2. Breaking up general courses into specific modules such as Home Economics: textiles & sewing; nutrition & food preparation, health care
3. Teaching courses such as self-help housing, community dev. etc.

D.

III. LOGISTICAL AND ORGANIZATIONAL FACTORS AFFECTING AGRICULTURAL EDUCATION

14.01 Which of the following equipment/vehicles is available?

Equipment/Vehicles	In working order (No.)	Not working (No.)
Land Rovers	____	____
Motorcycles	____	____
Bicycles	____	____
Other	____	____
Cameras	____	____
Overhead Projectors	____	____
Movie Projectors	____	____
Slide Projectors	____	____
Tape Recorders	____	____
Adding machines	____	____
Duplicators	____	____
Typewriters	____	____
Other (specify) _____	____	____

14.02 Do you coordinate your work with any of the following staff or other agencies/departments?

Agency/Department	1. Yes/2. No	If yes, how?
Community Development	____	____
Research Station Officers	____	____
Health Inspectors/Assts.	____	____
Veterinary staff	____	____
Cooperative staff	____	____
Agricultural Credit/AFC loan staff	____	____
Census takers	____	____
Local primary/secondary sch. staff	____	____
General extension staff	____	____
Other (specify) _____	____	____
Party Committee	____	____

If yes, how?
1. assists with teaching
2. provides materials
3. receives materials from F.I. for courses
4. coordinates follow-up action
5. provides answers to participants' questions
6. Other (specify) _____

D. - 3 -

14.03 Is there an advisory committee for this F.I. or F.T.C.?
1. Yes ___ 2. No ___

14.04 Who are the members? _____

14.05 What are their functions? _____

_____

14.06 Is their advice followed? 1. Yes ___ 2. No ___

14.07 If no, why not? _____

14.08 How much of your time do you devote to each of the following

	Hours per week (In 1979)	Adequate? 1. Yes/2. No
Teaching	___	___
Preparation for courses	___	___
Sickness	___	___
Writing reports	___	___
Evaluating programmes	___	___
Office administration	___	___
Attending official meetings	___	___
Travelling	___	___
Funerals/other social obligations	___	___
Attending refresher/other education programmes	___	___
Supervision of other staff	___	___
Talking to individual farmers	___	___
Working with extension staff on follow-up programmes for participants of F.I. or F.T.C. progr.	___	___
Other (specify) _____	___	___

14.09 How many courses per year do you teach? ___

14.10 Does labour supply influence whether or not farmers adopt new practices? 1. Yes ___ 2. No ___

14.11 What would help you to do your job better?

	1. Yes/2.No	Priority
Better housing	___	___
Transport	___	___
More salary	___	___
Clear policy guidelines	___	___
Job description	___	___
Clean water	___	___
Electricity	___	___
More staff (specify type)	___	___

14.11 contd.	1. Yes/2. No	Priority
Demonstration/office equipment	___	___
Schools for children	___	___
Other (specify) _____	___	___

IV. GOVERNMENT POLICY AND FINANCIAL FACTORS AFFECTING AGRICULTURAL EDUCATION

15.01 What is Party and Government policy for agricultural and rural development?

Agricultural development: _____

_____

Rural development: _____

_____

15.02 Does the Party and Government provide enough funds or support for

Farm Institutes	___
Farmer Training Centres	___
General extension service	___
Specialist extension service	___
Female extension service	___
Reading material/posters	___
Community development	___
Health assistance	___
Radio agricultural programmes	___

1. Yes
2. No
3. Don't know

15.03 How would you rank the need of subsistence farmers for each of the following

Need	Most Important	Somewhat Imp.	Not very Imp.
Credit/AFC loan	___	___	___
Fertilizer/seeds/insecticide	___	___	___
Marketing facilities	___	___	___
Extension services	___	___	___
Better prices	___	___	___
Labour	___	___	___
Other (specify) _____	___	___	___

D. - 10 -

15.04 In terms of agricultural education, if the Government had more money what should they use it for?

Most important _____

Somewhat important _____

Not very important _____

Don't know ____

V. GENERAL OPEN-ENDED QUESTIONS

16.01 For subsistence farmers, is self-sufficiency in food improving or declining? _____

16.02 Have you heard of the Lima Programme? 1. Yes ___ 2. No ___

What is it? _____

_____

16.03 If subsistence farmers have problems with agriculture, who helps them the best in trying to solve them? _____

_____

16.04 If subsistence farmers had K 5,000 to invest, which of the following would they buy?

tractor	___	1. Yes
fertilizer	___	2. No
seeds	___	
livestock	___	
better house	___	
citrus trees	___	
well/borehole/pump	___	
education	___	
grinding mill	___	
food	___	
bicycle	___	
poultry	___	
plough	___	
use of labour	___	
Other (specify) _____	___	

16.05 From a subsistence farmer's point of view, to what do you think she/he attributes success in growing maize ___ millet ___ ?

1. planting timing
2. hybrid seed
3. ridging
4. hard work
5. fertilizer
6. money
7. medicine
8. pesticides
9. good fortune
10. spacing
11. Other (specify) _____

D.

16.06 What factors are most important in your efforts to advise and educate farmers about maize?

_____

_____

16.07 Is contact with subsistence farmers

	1. Yes/2. No	Priority choice
purely for imparting recommended practices	___	___
education and training in response to a need for a particular skill or knowledge	___	___
directly responsible for starting a new activity If yes, specify: _____	___	___
In terms of follow-up the responsibility of general extension staff If yes, why? _____	___	___

If yes, do you assist in any way?

_____

Interview Schedule E. Mpika College of Agriculture Staff

A STUDY OF

AGRICULTURAL EDUCATION OF THE SMALL FARMER IN ZAMBIA

Date:.....

1. BACKGROUND (E. College of Agriculture Staff)

17.01. Name (optional) _____ 17.02 Job Title: _____

17.03 Sex: Male _____ Female _____ 17.04 Age: _____

17.05 Length of time in present position: _____ 17.06 Do you have a written job description? 1. Yes 2. No _____

17.07 Previous work experience: _____

_____

17.08 Formal education: _____

17.09 Non-formal education (In-service training; Farm Institute or Farmer Training Centre Programmes, please specify location, duration and subject(s) of programmes/courses): _____

_____

_____

17.10 What is your field(s)of specialisation? _____

_____

17.11 Is your present work a career? _____ Yes/No

17.12 Have you had enough education _____ Yes/No 17.13 If no what type of training would you like to have? _____

17.14 What is your first language? _____

_____

II. AGRICULTURAL EDUCATION METHODS AND CONTENT

17.15 Couses Taught 1979/1980	Number of classes per week	Length of classes	Number of students Male	Female
Animal Production _____	_____	_____	_____	_____
Agri-Extension _____	_____	_____	_____	_____
Crop Production _____	_____	_____	_____	_____
Farm Management _____	_____	_____	_____	_____
Farm Engineering _____	_____	_____	_____	_____
Others(please _____	_____	_____	_____	_____
specify) _____	_____	_____	_____	_____
_____ _____	_____	_____	_____	_____

2/.....

17.16 Are students taught any adult education methods? 1. Yes ___ 2. No ___

17.17 If yes please describe _____

17.18 If no why not _____

17.19 Are students taught how to: prepare teaching materials; conduct demonstrations; use film/slide projectors? (Please elaborate)

_____

_____

_____

17.20 With respect to extension services for subsistence farmers, how do you rank each of the following in terms of your students future job descriptions?

Type of Advice/ Assistance	First Priority	Part of Job but not a priority	Not in could be useful	Description not useful	Responsibility-other dept.
Hybrid Maize					
Maize					
Sunflower					
Soyabeans					
Tobacco					
Cotton					
Rice					
Cassava					
Millet					
Sorghum					
Groundnuts					
Beans					
Sweet potato					
Irish potato					
Vegetables(onion tomatoes, cabbage, rape)					
Identifiecation of and finding solutions to farmer-problems					
Helping farmers to get credit/loans					
Explain gov't agr. policy to farmers					

17.20

Type of Advice/	First Priority	Part of job but not a priority	Not in job could be useful	Description not useful	Responsibility other dept.
Home economics (nutrition, childcare)					
Health care/first aid					
Helping farmers with marketing					
Helping farmers to find/use seeds, fertilizers, and insecticides					
Helping farmers with storage techniques					
Farm management and planning techniques					
Indentifying leaders among farmers to help with spreading new techniques					
Self/help housing techniques					
Encouragement to produce more					
Advice on alternative crops to try					
Citrus trees					
Bananas					
Cattle					
Oxen for ploughing					
Dairy cattle					
Pigs					
Goats					
Poultry/Ducks					
General extension (ploughing, planting, harvesting techniques, e.g. Lima Programme)					
Teaching a farmer a method and following up with weekly or monthly visits					
Other (please specify					

17.21 Which of the following do you teach your students to use, use yourself in teaching and for what reasons?

Method	Teach students			Method used by self			Reasons
	Very useful	Useful	Useless.	Very Useful	Useful	Useless	
Popular Theatre							
Discussion between two people							
Lecture method							
Demonstration							
Listening to Radio: Bemba etc.							
English							
Group discussion							
2 week programmes at F.I.S./F.T.C.S.							
Films/Slides Bemba etc.							
English							
Reading materials/posters							
Bemba etc.							
English							

III LOGISTICAL AND ORGANIZATIONAL FACTORS AFFECTING AGRICULTURAL EDUCATION

17.22 Do you discuss with your students at any time ways they might co-ordinate or co-operate with the following agencies/departments when working in the futute?

Agency/Department	Yes/No	If yes how/If no why not
Community Development	_____	_____
Research Station Officers	_____	_____
Health Inspectors/Assts	_____	_____
Veterinary Staff	_____	_____
Cooperative Staff	_____	_____
Agricultural Credit/AFC loan staff	_____	_____
Local Primary/Secondary School Staff	_____	_____
Party Committees	_____	_____
Village Productivity Committee	_____	_____
Other (specify)	_____	_____
Mission/Church personnel	_____	_____

17.23 How much time per week do you usually devote to each of the following:

		In your opinion enough/no enough
Teaching - Lecturing	_____	_____
Teaching - Discussions	_____	_____
Teaching - Practical work or demonstrations	_____	_____
Counseling students	_____	_____
Preparation for teaching	_____	_____
Administrative work	_____	_____
Attending meetings	_____	_____
Sickness	_____	_____
Other (specify)	_____	_____

17.25 Many of your students will have 300 or more farmers of all types under their responsibility when they are working. Approximately how many of each type do you recommend that your students try and work with during a year?

Subsistence _____ Emergent _____

Commercial _____

IV. GOVERNMENT POLICY AND FINANCIAL FACTORS AFFECTING AGRICULTURAL EDUCATION

17.26 What does agricultural development mean for Zambia/Nation as whole? _____

_____

17.27 In terms of agricultural education, if the Government had more money, what should they use it for _____

_____

17.28 What is needed at the College to improve the quality of education? _____

_____

V. GENERAL OPEN-ENDED QUESTIONS

17.29 For subsistence farmers, is self sufficiency improving or declining?

17.30 Which of the following do you personally agree with as examples of the role of Agricultural Assistants in extension?

Technical Advisers to farmers on recommended crops only Yes/No - Why _____

Technical Advisers to farmers on recommended crops and basic subsistence crops Yes/No - Why _____

Technical Advisers to farmers on recommended and basic subsistence crops with routine followup visits Yes/No - Why _____

_____

17.31 Please describe what you teach students about demonstrations. purposes:

Subjects of Demonstrations:

Methods of organizing demonstrations:

- Sources of inputs
- Site
- Methods of announcing to farmers
- Numbers of farmers/how chosen
-

Number of visits extension personnel should make to the site and for what purposes:

Purpose and number of consective times same farmers should visit the demonstration site:

While farmers are at the demonstration site, what occurs? (lectures, discussion, questions and answers)

What followup should extension personnel do?

Who evaluates demonstrations?

In your opinion, what do farmers gain from demonstrations?

Interview Schedule F. Provincial
Agricultural Officers

Date: _____

A STUDY OF
AGRICULTURAL EDUCATION OF THE SMALL FARMER IN
ZAMBIA

18.00 Which of the following agricultural education sources, methods and techniques are helpful to subsistence farmers and their children?

Educational Source/Method/Technique	Have helped A lot	A little	No Help
Farm Institute/Farmer Training Centre	___	___	___
Field Days	___	___	___
Demonstrations	___	___	___
Agricultural Shows	___	___	___
Radio: Farm Forum/Farm Notebook: ~~Bemba~~ Local	___	___	___
~~English~~ English	___	___	___
Posters	___	___	___
Booklets/leaflets/magazines: ~~Bemba~~ Local	___	___	___
~~English~~ English	___	___	___
Community Development Programme (literacy, agriculture, child care)	___	___	___
Party Committee	___	___	___
Village Productivity Committee	___	___	___
Cooperativ Personnel	___	___	___
Local school personnel	___	___	___
Young Farmers Club	___	___	___
School Production Unit	___	___	___
Mission Personnel	___	___	___
Church Personnel	___	___	___
Neighbours/friends	___	___	___
Specialist extension (poultry, cattle, horticulture)	___	___	___
Research Station Personnel	___	___	___
Veterinary Assistants	___	___	___
Health Assistants	___	___	___
General extension visits to farm/home	___	___	___
General extension visits by farmers to village/camp	___	___	___
Frequent follow-up visits to farmers after they have attended a course or demonstration	___	___	___
Other (specify) _____	___	___	___

18.01 Do you ever have time to talk to individual farmers? _____

18.02 If yes, please estimate:

	No. of visits per month to farmers
Subsistence farmers	_____
Emergent farmers	_____
Commercial farmers	_____

18.03 Approximately how many visits per month do the District Agricultural Officers make to each of their agricultural camps? _____

18.04 Approximately how many visits per month would you like D.A.O.s to make to each of their agricultural camps? _____

18.05 What purpose is served by a D.A.O.'s visit to an agricultural camp?

_____

18.06 Approximately how many subsistence, emergent and commercial farmers do you have in your province? _____

18.07 Approximately how many of your staff are actually in contact with subsistence farmers? _____

18.08 How many subsistence farmers do you expect to be reached by your field staff per year? _____

18.09 What are possible reasons for Camp Staff not visiting subsistence farmers? _____

_____

18.10 Approximately how many of your field staff have bicycles? _____

motorcycles? _____

18.11 How many Land Rovers does your provincial office have? _____

18.12 How many drums of petrol per month does each provincial vehicle use? _____

18.13 How many Land Rovers does your district office have? _____

18.14 How many drums of petrol per month are used by your district office? _____

18.15 What is the role of specialist officers at the provincial level?

_____

18.16 What is the role of specialist officers at the district level?

_____

18.17 Do specialist officers concentrate on

A. Subsistence farmers Yes/No

B. Emergent farmers Yes/No

C. Commercial farmers Yes/No

18.18 How much of the agricultural work is done by the women? ~~this farm~~?

_____

18.19 Approximately how many Home Economics staff do you have in your province? _____

18.20 Is this adequate? Yes/No

18.21 If yes, why? _____

18.22 If no, why not? _____

18.23 Approximately how many female extension officers do you have in your province? _____

18.24 Is this adequate? Yes/No

18.25 If yes, why? _____

18.26 If no, why not? _____

18.27 Approximately how many rural depots do you have throughout your province? _____

18.28 How are they supplied with seeds, fertilizers, insecticides?

_____

18.29 Are the supplies adequate, for example, during the planting season?

_____

18.30 Would it be feasible/helpful if the D.A.O.s were responsible for delivery of inputs such as seeds, fertilizers, etc.?

_____

18.31 Are the following costs of

	too high	adequate	not high enough
Fertilizer	___	___	___
Insecticide	___	___	___
Hybrid seeds	___	___	___
Crops/produce sold by farmers	___	___	___

18.32 Should maize be graded in a farmer's presence? Yes/No

18.33 When weighing hybrid maize, is there an average weight for the different grades of maize? Yes/No

18.34 Would you recommend that the Department of Agriculture issue any of the following to Extension Field Staff?

	(In each case):	If not why not?
Uniforms	yes/no	_____
Gumboots	yes/no	_____
Shoes	yes/no	_____
Raincoats	yes/no	_____
Torches	yes/no	_____

18.35 Is the working relationship between research stations and Camp staff satisfactory in terms of efficiency? Yes/No

If yes, why? _____

If no, why not? _____

18.36 Do the Farm Institutes and Farmer Training Centres in your province have advisory bodies? Yes/No

18.37 Is the function of the advisory body only to plan the annual educational programmes of the F.I.s and F.T.C.s?

_____

18.38 If yes, please indicate if any of the following might also be useful for advisory bodies:

	Yes/No	Why?
1. To examine the educational programme content	_____	_____
2. To evaluate the effectiveness of programmes	_____	_____
3. To discuss, modify as necessary and approve budget proposals prepared by the officer in charge or principal	_____	_____
4. To discuss and approve requests for demonstration equipment	_____	_____
5. Advisory committees could consider problems and make recommendations for possible solutions	_____	_____
6. To consider staffing needs and make recommendations for number and type of new staff needed	_____	_____

18.39 Possible composition of an Advisory Board:

	Already member of F.I./F.T.C. Yes/No	Should be member Yes/No	Should not be member Yes/No
District Agric. Officer	___	___	___
Agricultural Assistants	___	___	___
Councillors	___	___	___
Training Officers	___	___	___
Specialist Officers	___	___	___
Chiefs/Village Headmen	___	___	___
Local Leaders	___	___	___
Politicians	___	___	___
Churchmen/women	___	___	___
Farmers (men)	___	___	___
(women)	___	___	___
Principal/Officer in Charge	___	___	___

18.40 How can the existing Extension Services be upgraded?

_____

_____

_____

A P P E N D I X I I

ZAMBIA COLLEGE OF AGRICULTURE, MPIKA

PROPOSALS FOR FARMERS IN VILLAGES SURROUNDING THE COLLEGE

This is the first attempt to outline an Extension Service directed to the traditional villages closest to the college area, a program to be carried out by our students as a part of their extension training.

One of the objectives of the Mpika College of Agriculture is: "to stimulate and assist in the development of farming potentials of the area surrounding the college." Attempts in this direction have so far been done on a limited scale, e.g.:

(a) arranging college field days and demonstrations

(b) participation in agricultural shows

(c) Farm Management Department's activities in the Chintu Block

(d) informal contacts between college staff and farmers

These activities have primarily been directed towards emergent and commercial farmers in the area. However, with the present emphasis the Nation puts on the development of traditional farmers (as elaborated in the Third National Development Plan), it seem important that more emphasis is put on training our students how to approach traditional farmers and how to develop them into cash crop producers who supply the market with food-stuffs.

There may be other reasons for giving assistance to the surrounding villages, e.g.:

(a) It will make the village people friendly to the college and college activities. It is understandable if they consider the college as an intruder into this area, since some of them have been evicted from college land when the college was established, and since the college area in large part has been considered a traditional land resource for the local villages. We compete with them for their traditional land, and they want something from the college in exchange.

(b) We want to create a general understanding among local people for college activities, and how they can learn and benefit from college activities.

We do not only need to restrict ourselves to improvement of farming methods but may consider extension of other activities as well, such as for example antenatal and child care programmes presently launched by the clinic, nutrition campaigns, road and bridge construction. In fact village people do appreciate the programmes now carried out by the clinic, and they want more of them.

Village development is a slow process, where many components have to be considered. For example, to start a cash crop production, the following factors are needed by the farmer:

(a) knowledge of production techniques

(b) incentives to produce, e.g., fair price for the produce

(c) a market where he can sell his produce

(d) availability of purchasable inputs, such as seed, fertilizer and chemicals

(e) capital for purchase of implements and inputs

(f) roads and transport to reach the market place

In order to motivate the villagers to try new practices, we should start an extension programme with simple low cost activities for which the village people feel a need. Preferably we could start with demonstrations which are more or less certain to give spectacular results. Then the farmers will recognize the results and may want to try the demonstrated practices on their own fields. Only when the village people have realized the benefits from the starting activities is it advisable to expand the extension services into new and more complicated activities.

Which activities to start with have to be decided after consulting village headman and village people. Tentative starting activities could be:

(a) demonstration plots with maize

(b) improving roads and bridges (could be suitable activities for the next Humanism Day)

(c) extension of on-going clinic programmes

(d) nutrition teaching in bush classes